

Philosophy of the Way: Systemic Perspectives on Cognition, Creativity, and Ethics of the Modern Era

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Preface

This book presents a collection of ideas that through entwined threads of logical thought and analogical reasoning connect versatile fields of human inquiry about the natural and experiential order. It is organized to resemble a symphony in four movements more than a classically arranged popular scientific work. Consequently, each of its four chapters presents a structural whole, systematized in accordance with the traditional structure of a scientific work, comprising synopsis, introduction and conclusion sections. Any chapter could be, therefore, read independently of other chapters. Similarly, the writing style expressed herein is associated with long, concise and exact sentences, which might make the book less transparent for the readers less familiar with the terminology used. The ideal that guided the composition of individual sentences throughout this work was related to construction of expressions that might be easily cropped from the rest of the work and pondered upon as independent inspirational thoughts. Despite that, if we were indeed to hold on to the idea that ‘whatever a man knows, whatever is not mere rumbling and roaring that he has heard, can be said in three words’, these words could be Nature, Being and the Way. As we shall see throughout the following discourse, the first two would correspond to the basic poles that in their ‘co-creative’ interaction give rise to all the experiential patterns that comprise ‘the world’. However, without the third component, which may be depicted as a string stretched between these two poles, there would be no potential to express this interplay between human mind and Nature in terms of intelligible concepts. The very notion of the Way accordingly presents the central concept of this book.

Having written this book while standing on the pedestal of (a) my professional engagement in the so-called ‘hard’ sciences, (b) basic education in physical chemistry and (c) a PhD degree in nanosciences and nanotechnologies, I do not think that this book should be categorized as a postmodern work. This book rather epitomizes my perpetual cravings to complement this disciplined creative participation in production of pragmatic novel knowledge with an exploration of the metaphysical foundations of our scientific endeavors from partially ethico-aesthetical perspectives. Consequently, this book is an unending quest for the foundations of human knowledge. On a few occasions in the course of this book, we seem to touch these foundations, although leave it up to the reader to further engage in investigating the deeper implications of the union of knowledge and beauty found there.

This book presents a quest for the Middle Way that would unite many confronting scientific, artistic and religious opinions and ideals that pervade the modern society, and provide beneficial options for their future juxtapositions. It is looking back to the history of human understanding of natural and experiential events and conjoining many lines of thought into embroidery that would form sails for some novel ships in search of new coasts of knowledge. Despite being an interdisciplinary study of the nature of human experience and creativity, meant to capture the interest of a wide array of human worldviews and professions, in contrast with the traditional conceptualizations of popular scientific books that in large extent lean on free and non-scrutinized interpretations of historic events, I have always felt uncomfortable writing about events not witnessed, primarily because each such description inevitably presents a poor and incomplete representation that might frequently embarrass the actors of the real events. Despite such an approach, I am aware that the ideas and opinions presented herein are, so to say, standing on the shoulders of giants. Although hundreds of references were cited at the end of each chapter, subtle inspirational thoughts that invoked numerous sparkles of ideas can hardly be caught and are, thereupon, necessarily left non-referred to. Anyhow, I have always thought that

we ought to be responsible builders of a long tradition of knowledge, but also keep in mind that it is through humbleness and quietude that we have an opportunity to become truly great. For, many remarkable minds have decided to become great by remaining small, unknown and never referred to when the final credits were reckoned. Some of the most inspiring beings that I have known have never become widely renown, although the scope of their importance in sustaining and inspiring the tradition of marvelous thinking has been inestimably immense.

It is the destiny of the evolution of knowledge to proceed in two directions, one that streams forward to the areas of ‘unanswered questions’ and the other that humbly takes steps back towards the foundations of knowledge permeated with ‘unquestioned answers’. Today’s society witnesses an apparent imbalance in favor of propagation of the former, which seems to frequently promote dishonest ambitions and the egotistic and unethical ‘race for the prize’. This book may, thereupon, provide a remedy for this unbalance by speaking in favor of the beauty and ethics dormant in the latter approach. For if the history of the evolution of knowledge, human creativity, ethics and love can teach us anything, it is simply the importance of cultivating the heart of eternal seekers.

Vuk Uskoković, Potsdam, New York, April 2007

On Science of Metaphors and the Nature of Systemic Reasoning

Abstract

Scientific method is presented herein not as a means for investigating a true and objective character of a universal reality, but as a metaphorical tool applied for the mutual coordination of human experiences. By acknowledging the same, co-orientational and metaphoric roots of science, religion, arts and ordinary linguistic communications, the chances for their fruitful interdependent application increase, whereby the potential of their conflicts in battles for the sole positions at the territory of 'truth' diminishes. Mutual references to subjectively constructivist and traditional, positivistic frameworks of scientific analysis and explanation of cognitive phenomena, intertwined in the proposed concept of co-creation of experiential qualities, are supplied as support for such a proposition. The role of metaphors in both learning the elementary principles of ethics via observing natural phenomena and discovering novel scientific ideas is thus acknowledged as complementary to standard logical inferences. Systemic reasoning based on finding analogous correspondences among various patterns at different levels of complexity of natural systems emanates as an imaginative aspect of creative thinking. Numerous other consequences of adopting the proposed metaphorical nature of all human communications in the domains of scientific, religious and overall social understanding are described in the course of this chapter.

Introduction

'By education most have been misled;
So they believe, because they were bred. The priest
continues where the nurse began, And thus the child
imposes on the man'

John Dryden, *The Hind and the Panther*

The essential ideas that comprise this chapter have been developed as a form of response to an evident neglect of the philosophical issues throughout the standard courses of contemporary scientific education. It seems as if the majority of modern students and young scientists do not care much to ask and deepen some of the fundamental questions about science, and are instead instigated to leave behind all insecurities, uncertainties and relinquish their naturally inquiring minds in order to follow a programmatic and predetermined flow of the evolution of knowledge. Instead of seeking deep and profound meanings of natural relationships, these modern minds tend to accept the existence of objective qualities, rules of conduct and features of reality independent of the context and subjective interpretation. Superficial and often literal understanding of scientific and religious representations could be reasonably blamed for one such disappointing state of affairs with respect to the philosophic literacy of contemporary scholars in natural sciences. Yet, education stands for the long and tedious process of building the bases of knowledge and values that are slowly and inconspicuously, but also continuously and unstopably reflected in the quality of human living.

The path of this chapter will consequently take us to a search for the foundations of science. The treasures found on the way will subsequently turn out to be relevant for discerning the basic ground for human endeavors in general. However, the first step on such a voyage towards facing the basic Platonic problem of philosophy as 'finding an unconditional and

absolute ground for conditionally derived expressions' occurs when our being becomes illuminated by a striking insight that besides obvious, predictable and chain-like aspects of the conceptual networks we employ in our depictions of the world there must be something unexplained, mystical and more to the picture of reality than meets the eye. Instigated by the bright, visionary inspirations, our imagination may leap in those moments, like 'the one who sees beauty here and invokes the features of the transcendental beauty and thus as if he has acquired wings aims to fly upward; but he cannot and therefore as if he were a bird just looks upward, careless of the world below'¹, as Plato's words described the joy of the beginnings of our quest for knowledge. Therefore, the views towards the transparent patches of cloudless sky, as analogous to our tracing of the outlines of horizons of our knowledge, may present the first impulses for breaking the chains of rigid, strict and narrow conceptual bonds of human representations of miraculous natural events and enriching the domains of visible and apparent, earthly and social landscapes with sacred treasures that deeply covered foundations of scientific and other humane events secretly shine with.

Systemic reasoning as a vital aspect of creative thinking

"When it is evening, ye say it will be fair weather for the sky is red. And in the morning, it will be foul weather to day for the sky is red and lowring. O ye hypocrites, ye can discern the face of the sky, but can ye not discern the signs of the times?"

Matthew 16:2-3

Induction and deduction present two essential aspects of logical reasoning, which has been the implicit foundation of the overall scientific, technological and philosophical progress of human civilization. Beside these two forms of logic, abduction (or qualitative induction, as Charles Sanders Pierce originally named it) is usually regarded as an additional form of logical thinking². It was proposed during the rise of the philosophical era of pragmatism as an iterative form of bidirectional inductive-deductive reasoning. Besides inferred conclusions that are subject to change in the course of an abductive logical analysis, initial assumptions are liable to change too. It was presumed as a more faithful representation of natural thinking where neither implicit premises nor final conclusions remain permanently fixed, but are instead subject to incessant reexaminations and modifications so as to find the best fit with experiential occurrences.

It is true that the cyclical abductive reasoning with its feedback between conclusions and premises overcomes many flaws that follow attempts to perfectly reflect natural thinking in form of classical, linear logical threads of thought. But unless it incorporates the use of metaphors in modifying its starting points of inquiry, it would also present a chain-like form of thinking, despite the fact that its beginnings and ends form a closed loop by being connected to each other. And as Henri Poincaré noted, 'Pure logic could never lead us to anything but tautologies; it could create nothing new; nor from it alone can any science issue'³.

In this work, another aspect of natural thinking will be presented, and that in the form of so-called systemic or metaphoric reasoning. In simple terms, it can be described as a way of linking various segments of parallel layers of logically, i.e., sequentially connected ideas into meaningful patterns of thought. But before proceeding to the discourse of the metaphorical nature of science and language and the merits of systemic, analogical reasoning, let us first mention the main flaws of induction and deduction as the basic forms of logical inference.

In the framework of logical reasoning, a given deduced explanation is accepted as valid if it is 'true'; and if the premises are true, the conclusion deduced out of them would be 'true' as well. However, the price paid for establishing such a 'verifiable' criterion of truth is that the informational content of any given system of knowledge becomes more or less implicitly comprised in the initial presumptions, depending on the extent of closeness of the given framework of reasoning. In a perfectly closed system, all the potential new discoveries are already defined by the fundamental premises; because all by itself it cannot lead to essentially new knowledge, deductive reasoning is thus considered as non-synthetic. Due to its redundancy, it can be used only as a logical method of explanation and a pointer to the mechanisms of described processes, but not as a method for reaching new fundamental scientific concepts.

In the case of inductive reasoning, premises comprise observed relationships, whereas a conclusion derived thereupon relates to a general case. However, such reasoning naturally leads to the empirical 'problem of induction'. The latter says that although induction can expand one's knowledge base, it does not necessarily support the criterion of truth. An induced general conclusion can never be verified with a perfect certainty, and can be, strictly speaking, regarded as a hypothesis only. Because explanations confirmed in a finite number of cases do not necessarily imply their future validity, it has often been said that 'science never proves anything'⁴.

However, another important flaw of inductive reasoning ought to be mentioned. Namely, because a correct induction presupposes the induced law as a hypothesis, not even inductive reasoning could be regarded as synthetic, i.e., as able to contribute to the essential enrichment of the patterns of knowledge. A general predicate needs to be known and presupposed before the subjects upon which its validity will be proven are chosen from a finite set defined by the criteria of plausibility of scientific statements within a given logical framework of reasoning. Each scientific measurement wherein specified variables are experimentally observed as corresponding to certain numerical values is conditioned by an earlier assumption of viability of implementation of the given or defined variables within the interaction between an experimentalist and the observed system⁵. The popular 'learning paradox', which says that by assuming that the hypothesis-formation process is of a purely inductive nature it becomes impossible to develop (i.e., learn) a more intricate logic on the basis of a less intricate one, stems from such a perspective⁶. All the statements that could be proven and all the questions that can be answered with 'true' answers are, therefore, predetermined by the settings of the framework of knowledge and the principles that govern the approach to construction of relationships between questions and answers, i.e., scientific descriptions and explanations. In other words, each statement, including this one, can be characterized as true or false depending on the postulated initial and implicit assumptions posed at the foundations of a given formalism of reasoning. The processes of induction, syllogism and defining, thus, clearly present incomplete means in strivings to enrich human knowledge.

More than this, each act of induction does not represent a neutral, interpretation-free and unprejudiced classification upon objectively collected databases, but rather employs subjective and metaphorical interpretations that stem from the previously proposed links, ideas and beliefs. However, the expression style of a typically structured scientific manuscript, carefully bypassing the effects of observer's imagination by requesting impersonal writing that is to stand on top of the attitude of unnatural certainty, mirrors the modern tendencies to suppress and ignore this inherent subjectivity that is deeply engrained in each scientific and logical analysis⁷. 'All our knowledge is interpretation in the light of our expectations, our theories, and is therefore

hypothetical in some way or the other'⁸, was the thought of Karl Popper, whereas Peter Medawar held the opinion that 'the scientific paper is a fraud in the sense that it does give a totally misleading narrative of the processes of thought that go into the making of scientific discoveries. The inductive format of the scientific paper should be discarded...scientists should not be ashamed to admit, as many of them apparently are ashamed to admit, that hypotheses appear in their minds along uncharted by-ways of thought; that they are imaginative and inspirational in character; that they are indeed adventures of the mind'⁷. This clearly suggests a key role of analogies and metaphors in the process of creative scientific reasoning. Werner Heisenberg meant a similar thing when he wrote that 'it is absolutely not true that only logical thinking and comprehending and application of affirmed natural laws are important in science. In fact, imagination plays the crucial role in the kingdom of science, and that particularly holds for the natural science. Because, even though a lot of serious and careful experimental work is needed for gathering the facts, the very arranging of the facts becomes successful only if a man knows how to approach the phenomena with his feelings rather than mind'⁹.

Imaginative use of analogies can be regarded as a creative act that initiates and underlies the development of all scientific representations of experience. In fact, all these representations could be identified as containing metaphors derived from the abstractions that are typical for human mental reflections. The choice of imaginary aspects of human reasoning becomes inspired by the typical perceptual constancies and their experiential evolution, and as such - compared to strict and rigid links of induction and deduction - provides cognitive sprouts for an endless evolution of the scientific thought.

Pure logical reasoning particularly fails when it comes to modeling circular causal chains wherein every cause presents an effect and *vice versa*. As a matter of fact, logic is unable to deal with as simple recursive circuits as a thermostat without generating self-contradictions. And the emergent qualities of life arise precisely out of complex interdependencies between innumerable causal circles at many different overlapping levels of complexity, including genetic, intercellular, metabolic, ecosystemic and biospheric domains. Although logic and dialectics have been celebrated as the main pathways of arrival to novel ideas and enriched knowledge contents, analogical reasoning is herein suggested as a complementary part thereof. It is the balance between dialectics and systemic reasoning that reflects the creativity of human thinking. An overemphasis on dialectical thinking and the confrontational development of ideas gives rise to neo-Darwinian and neo-Nietzschean ethics wherein Macbethian 'fair is foul and foul is fair' stands as an inexorable ethical norm. The whole culture wherein 'people are more comfortable seeing men holding guns than holding hands', as Ernest Gaines wrote, has slowly been raised based on such dialectical worldviews. Such an attitude is normally justified by the fact that raising antitheses in front of theses presents the correct way for providing mutual arrivals to novel rational syntheses. Although the usefulness of this method of reasoning and communication cannot be discarded, it is suggested herein that a certain dose of systemic reasoning would balance and harmonize the whole process of common 'building' of scientific towers of ideas.

Perceptual and cognitive co-creation of qualities

'Reason can grasp only what she herself has produced according to her own design'

Immanuel Kant, *Critique of Pure Reason*

In order to better understand the roots of metaphorical nature of every cognitive stance as well as the subsequent necessity for inauguration of systemic reasoning as the crown of creative thinking, I shall start with describing the cognitive basis for emanation of elementary experiences, named herein as ‘co-creation of qualities’.

As far as the current attitude towards cognitive phenomena is concerned, two major paradigms may be discerned. The first one belongs to the empirical tradition of scientific observations, according to which human experiences present faithful, directly corresponding representations of perceptive impulses of an outer, objective world. Primary experiences are correspondingly described as ‘perceptions’, which according to their original meaning denote biological analogues of passive detection processes through which cameras form images of the outer world. An eye that sees the world may be accordingly considered as a passive detector of eye-independent, objective natural processes. In other words, as Aristotle proclaimed, there is ‘light’ in the world, but not in the eye itself.

On the other side, there are constructivist theories of cognition, according to which all the details of one’s experiential domain are thought to be formed by means of personal assimilation of the uniform sea of surrounding impulses into meaningful wholes. Emphasis in the explanation of perceptual and cognitive processes, altogether with the responsibility for the state of the world as the subject perceives it, are in constructivist models of cognition thoroughly shifted from outer circumstances to the epistemological core of the subject. ‘Light’ of the world as an ontological phenomenon is not explicitly referred to in radical constructivist worldviews, whereas in accordance with the opinion held by Plato and the preclassical Greeks, who did not make semantic distinctions between the concepts of ‘eye’ and ‘light’, there ought to be a ‘light’ that eye ‘shines’ to the world.

Many experiments have provided substantial evidence in favor of the idea that eye or any other sensual organ does not have a passive role of directly representing the patterns of light or any other environmental impulses upon the subject’s *Tabula Rasa* cognitive substrate, but is actively included not only in the selection of absorbed impulses, but in their reshaping and adaptation to the cognitive needs of the subject¹⁰. As a matter of fact, human eye coupled with the corresponding neural patterns defines the perceptive elements of environment as well as the pathways of the perception¹¹. The classical theories of passive sight are today being increasingly replaced by the theories of proactive sight, according to which the sensual dynamics plays a key role in defining the world as we see it. Besides the fact that conscious shifts of attention between perceived experiential details may provide a rough evidence of the role that the subjective interest plays in perceptual construction processes, it is nowadays known that not only intensities, but primarily local variations thereof (hence, biological organisms can sense only differences) on the retinal surface stimulate the optical nerve. Saccadic or micronystagmic eye movements that during visual observation continually shift the position of light-sensitive retinal cells in relation to the optical image present a consequence of such an ability of biological senses to detect only differences as information⁴. The existence of an imperceptible ‘blind spot’ at the position where the optical nerve protrudes retina and leaves the eyeball - so that we do not see that we do not see - presents an elegant example which suggests that the subjectively constructive aspect of perception needs to be acknowledged in all comprehensive models of cognition. The objectivistic models of perception that eliminate the inevitably present subjective effects and rely only on external parameters in deriving mind/environment correlations are, therefore, incapable of explaining numerous sensual phenomena¹², including the facts that Creek and Natchez Indians do not distinguish yellow and green, whereas Tunica and Pueblo Indians do

not discern blue from green¹³. Heinz von Foerster accordingly observed that ‘if we stimulate a cell from an organ of vision with a droplet of vinegar, it will respond with a light signal, and if we apply a small electrical impulse to a tongue, we can generate the sense of sourness’¹⁴. Likewise, if one illuminates a rod with a white light from one side and a red light from the other, a red and a green shadow will appear despite the fact that photons with wavelengths corresponding to green color could not be detected. Or if one looks at a raised hand in a shadow between a lit candle and the sunset light, blue shade might become visible on the hand in spite of the fact that blue photons could similarly not be detected¹⁵. The perception of green color in the former case and blue color in the latter evidently do not present results of simple, unilateral correlations between the external features of reality and their mental representations, but rather an outcome of the bidirectional, co-creative ‘shaping’ of perceptual qualities in the relationship between mind and Nature.

Instead of comprising classical computational ‘inputs’ and ‘outputs’, a neural system is in the course of its active biological correspondence with the environment exposed to continuous structural perturbations that, however, merely modify and stimulate, but do not predetermine the patterns of activity of the neural network itself. A neural system could be, therefore, considered not as a mere filter for mapping the objective reality, but as an active and semi-autonomous co-creator of a unique experiential world in itself. Focus in investigation of perceptual phenomena should, accordingly, not end with references to external initiations of internal structural perturbations, as has been the classical research trend in cognitive sciences and the conditioning experimental approaches of behavioral psychology. Many fallacious consequences of behavioral approaches to understanding cognitive phenomena could be overcome accordingly, including: a) the ideas of attaining fruitful educational accomplishments by means of pure conditioning (i.e., rewards and punishments) and mechanistic ‘instillation’ of knowledge¹⁶; b) the insistence on external and visible manifestations of life as sufficient for judging about its internal patterns (i.e., emotions, intentions, ideals); c) the idea that perceptual stimulations seen from the perspective of an external observer and of the subject are perfectly equal.

According to the constructivism-inspired theories of cognition^{15,17-19}, learning involves assimilation of ostensible perceptual constancies in terms of topographic similarities and temporal repetitions, and their fixation in forms of objects, qualities and their complex harmonies with the aim to improve the subject’s level of coordinative stability of movements. Each being can be correspondingly regarded as a continual co-creator of its own world of experience, despite the fact that such a nature of the origin of experiential realities becomes normally forgotten later in life when the objects of the world start to be seen as pre-given. Instead of personally constructed and *as-if*, one’s experiential features become gradually consolidated and accepted in their *as-it-is*, objective forms following numerous experiential and linguistic affirmations of ‘maps’ of individual experiences as the objective ‘territories’. Despite such a cognitive illusion, objects and qualities of the experiential world present not purely objective representations of the universal reality, but unique, subjective and unrepeatable interpretations of always novel streams of information that ‘flow’ at the underlying ontological basis of experiential phenomena. Each detail of one’s experiential world comprises both a common, ‘objective’ side (that promotes its ‘sharing’ character) and a unique, personally constructed side (whereby these two sides are inexplicably intertwined to form a higher-order, co-creational qualitative nature of experiential phenomena), so that the conflict between constructivist and objectivistic worldviews might be solved by referring to their inter-subjective phenomenological interdependence. In other words, there may be both ‘light’ in the world and a ‘light’ in the eye, whereby the intersections of these

two 'sources of light' - that represent the domains of 'objective' natural reality and subjective epistemological backgrounds, respectively - give rise to every form of experience. Martin Buber correspondingly noticed that 'it is simply not the case that a child first sees an object and then sets itself in relation with it; the tendency towards forming relations comes first'²⁰. References to relationships, encounters and facings, offering hands and sparkling touches may be therefore regarded as essential pathways to the attainment of ideals of consummate living and knowing.

While objectivistic attitudes could be justified by the easily verifiable existence of similar and 'shareable' experiential aspects, the partial validity of constructivist stances may be supported by the fact that each particular biological structure has a specific cognitive 'view to the world' and correspondingly produces unique and unrepeatably perceptual experiences at every instance of its living. This is why metaphysical analogies to human soul, sources of ingenuity and uniqueness of one's existence, are sought as solutions for imbalances in the world of objectivity, whereas analogies of the existential sources that enable sharing of experiences - as in the form of metaphysical love¹⁵ - are introduced in constructivist worldviews for restoring the cognitive balances lost due to exceeding conceptual shifts to the sides of collective and communal, and individual and original, respectively.

According to constructivist theories, in aiming to establish orientation and movement stability in its experiential world, a child learns how to maintain specific apparent perceptual differences as constant so that it may create a viable, stable and controllable relationship with its environment. An opposite direction of adaptation comparing to the Darwinian is inherent in such a hypothesis of personal shaping and modification of 'surrounding' physical qualities. Namely, whereby modifications of the biophysical structure of an organism as a consequence of the need to adapt within an actual set of environmental constraints is considered as Darwinian adaptation, a constructivist perception autonomously defines permanent qualities of the experiential world in order to accomplish their harmonious assimilation within the cognitive capacities and conscious concepts of the organism. However, by accepting both explanatory approaches as equally relevant - an 'objective' one wherein organisms passively adapt to environmental limitations, and a radical constructivist one wherein environmental features of the experiential world adapt to the physical structure, cognitive predispositions and phenomenological intentions of the organism - a mutual, co-evolutionary adaptation as an elementary aspect of creative (i.e., multilateral, dialogical and unautocratic) relationships may be regarded as immanent in every co-creational instance of the development of one's experiential world.

Whereas the major flaws of objectivistic scientific attitudes - in most cases referring to observer-influenced experimental outcomes - have been acknowledged in large extent elsewhere²¹⁻³⁰, a few minor demerits of constructivist stances will be mentioned here in an attempt to blend the two outlooks into a single, 'co-creational' worldview. First of all, it is hard to imagine that an observer might be able to construct a meaningful world out of a uniform sea of impulses, i.e., without any outer hints on how to assemble at first confusing array of impulses into a drifting surrounding through which one would be able to comfortably coordinate oneself. Biological structures can detect only differences, which is why the notion of 'perceptual difference' may be regarded as equivalent to the concept of information. The existence of *a priori* information in the environment surrounding the subject can be, therefore, reasonably presumed, and mutual, two-way construction of one's experiential world - similar to a child that assembles Lego figures not using shapeless pieces, but specifically connecting, prefabricated parts - can be taken as a more accurate representation of the processes of perception.

As far as the communicational potentials are concerned, too many solipsistic traps would be imminent following a general adoption of constructivist cognitive attitudes to be avoided easily. Conflictive unconformities and anarchistic interactions of incompatible worldviews would pervade the community in a similar extent as the battles for gaining individuality, ‘personal identity’ and meaning of the self are nowadays persistent in the social domain standardized and uniformed in accordance with the norms of objective universality. To find a balance between objectivistic and constructivist stances, to navigate the ship of human knowledge among dangerous whirlpools of solipsism and inert streams of objectivism and steer it towards new coasts of knowledge presents a difficult challenge and one of the aims of this very discourse too.

Proposing elimination of any reference to ontological reality, constructivist theories of cognition present exact opposites to the traditional objectivistic worldviews of empirical sciences wherein relationships between scientific hypotheses and epistemological, cognitive and biological observational bases of scientific minds have been spontaneously torn apart through the decades of instigation of the positivistic postulates in scientific reasoning. Whereas the theories of radical constructivism could be correspondingly considered as peaks in the empirical tradition of examination of the natural order, objectivism of the traditional and reigning hard science worldviews may be related to the peaks in the positivistic tradition of scientific research. Belonging to the same empirical-positivistic legacy of scientific analysis, the encounter of these two approaches presents a perfect case for investigating the ultimate philosophical grounds of scientific method in general. By closing the circle between the two extremes, an enormous insight into the nature of human thinking - in terms of the fascinating application of an instrument of thinking to analyze itself by referring to itself (which partly explains the helplessness of logical tools in gaining understanding in this context) - may be expected as an outcome.

Philosophy of the Way

“All real living is meeting”
Martin Buber, *I and Thou*

Each particular physical structure of a cognitive being coupled with nonrecurring environmental stimuli brings forth unique cognitive perspectives and uniquely distinguished qualities of the experiential world at each instance of its existence. Because individual perceptions and the subsequent streams of reflection are partly determined by an ontological reality that the subject is immersed into and partly by the being’s unique epistemological and biological bases, instead of either an objective and universal reality and the nature of human knowledge, or the multiversum of solipsistic worldviews detached from the ‘common grounds’ of experiential phenomena, an inter-subjective nature of cognition and knowledge, implicitly permeated with an inextricable balance of realistic and subjective experiential aspects may be observed as innate to individual, social and biospheric existential domains. Cognitive worldviews that acknowledge an ‘objective’ reality interspersed with subjectively constructive cognitive structures avoid both the disadvantageous reliance on categorical and universal objectivistic truths, and a similarly ignorant immersion into social- and tradition-disconnected solipsistic worldviews. Whereas the disruption of such a co-creational cognitive balance in favor of an overemphasis on subjective experiential aspects would result in anarchistic conflicts of incompatible solipsistic attitudes, deviations from the co-creational balance onto the objectivistic

side would bring about a social medium pervaded with individual cognitive stances overwhelmed with the sense of isolation from an inert and machine-like world that ‘ticks’ without any reference to the deepest qualities of human beings.

Systemic problem-solving approaches tend to reach not short-term and temporary, but long-term and lasting solutions to experiential puzzles and societal problems by invoking not unilateral reinforcements, but balances between diverse systemic effects. This is why the co-creational balance that intertwines subjective and objective experiential aspects into a single whole presents only an instance of a broader Philosophy of the Way. Because the symbol of the Way indicates simultaneous connectedness and separateness (as it has the role of connecting entities that are, thus, in the first place presupposed as separated), employing this term as a metaphor naturally implies that quests to attain balances are the pathways to profound reasoning and acting. String theory, currently the most detailed conceptual framework for explaining physical phenomena, depicts the entire experience in terms of music, which can be due to its forming only through alternate moments of approaching and distancing of particular nodes, considered as naturally implicit in the concept of the Way. If the charm of music is to be preserved, the oscillating entities should neither approach each other too closely and unite, nor diverge and permanently separate. This is why the concept of co-creational character of perception may be represented with the following principle:

‘Each Quality is a Way’

Innumerable ethico-aesthetical, ontological and religious implications of the concept of co-creational nature of experiences could be immediately recognized. As details of one’s experiential world could be no longer considered as either the products of thoroughly autonomous, radically constructivist creation of perceptual constancies and experiential regularities from a uniform stream of raw impulses that arise at the interface between the being and its environment, or manifestations of an objective and cognitively detached world that inertly develops in front of the being, more reverent, inquiring and vivid attitudes oriented towards each detail of the experiential world may naturally spring into life. Every perceptual boundary, as primary cognitive information, may be realized as coming into existence through a co-creational ‘touch’ between a being and an underlying natural reality. Each existential moment may be considered as the one carrying endless potentials for both ‘inner’ and ‘outer’, subjective and realistic improvements of being and his environment, respectively and simultaneously. Each existential moment may also be considered as a unique moment of ‘spiritual learning’ of the being through a continual evolution of his experiential world in accordance with the co-creational correspondence with ontological foundations of Nature. A new intellectual religion may eventually be proposed in agreement with the co-creative nature of experiences, in a way where God in the form of ‘hidden reality’, i.e., the other, ontological side of co-creation of experiential qualities, would be regarded as immanent in each detail and instance of one’s experiential world. Simply saying, each detail of one’s experiential world can be regarded as a result of a co-creational communication between the deepest spiritual qualities of a subject being and God. Countless facets of the old religions of the world may accordingly be blended in a single theological worldview, in concert with the previous accounts of the Philosophy of the Way present in the words of Chuang-tzu: ‘Tao, the sacred Way is not choosing between this or that; instead, it is proceeding in harmony with all of them’. From this perspective, God might be considered as simultaneously metaphysical and transcendental (as it corresponds to the ‘hidden’

ontological foundations of experiential co-creation), and omnipresent and immanent (as it is being manifested in every experiential instance of one's being). Such a theology of the Way may be at the same time monotheistic and polytheistic; the former as a result of 'common' realistic foundations of versatile experiences and the latter because every being could be realized as having a unique, personal communication with God. Instead of 'objectively' regarding experience as a destiny play in the hands of God's creation and only the 'puppet role' played by living creatures, and instead of finding one's lonely solipsistic omnipresence in every minute detail of the world (because the whole world of one's experience is, according to the constructivist hypothesis, the subject's invention, so that one may consequently find himself in verily everything), the co-creational thesis provides a standpoint wherefrom each detail of the world of one's experience might be seen as a corporeal outcome of the genuine communication between one's spiritual essence and God. Instead of sole discernment of reflections of one's deepest aspirations 'here, there and everywhere' - as in accordance with the Hindu mantra '*so ham*' - the whole experiential scope of one's existence could be considered as a co-creative interplay between the hidden essences of Nature and of the subject's being.

In order for the dynamic balance of mutually incommensurable subjective and objective aspects of experience to harmoniously proliferate through individual/cognitive and interactive/social domains, renunciation of the ideals related to attainment of permanent balances and firm and everlasting grounds for scientific inquiry, insusceptible to flexible modifications thereof, is necessary. Unending attempts to reach and maintain inter-subjective balances in these encounters of mutually irreducible subjective and objective aspects of nature/experience might, in fact, lead to the fundamental evolution of human ideas. An incessant cultivation of tendencies to alternately overcome potential communicational solipsistic attitudes by aligning the orientational core of one's understanding through 'watching together the sun-rising horizons of our knowledge', and overcome potential communicational objectivistic attitudes by misaligning them through maintaining individuality and originality, i.e., 'walking alone into the distant sunsets', may be considered as the driving force for a perpetual balanced development of humane, societal and technological qualities of the respective cognitive environments. Numerous other dynamic balances, such as conformity/novelty, order/freedom, knowledge/intuition, guidance/adherence and originality/mimicry, may be recognized as analogous to the dynamic subjective/objective equilibrium proposed herein. However, the most significant ethico-aesthetical and creativity-fostering balance that can be derived from the co-creational standpoint is the ambivert balance of self-responsibility, meditative inwardness and introspective insight on one side, and empathic, extroversive and compassionate blending with the worldviews of others on the other side. These two complementary attitudes that may be identified as respective emanations of the two major Christian commandments (Mark 12:29-31), present reflections of the dialectical syllogisms of distancing and approaching, detaching and merging, identity-growing and identity-blending, through which emergent synthetic levels of beautiful, cosmically reverberating harmonies are formed. However, the potential significance of this genuine cognitive balance that transfigures the extremes of sadistic authoritarianism and manipulative 'tyranny' on one side, and masochistic irresponsibility and inert submissiveness on the other³¹, into a harmonically waving, ethico-aesthetical Middle Way is too broad to fit the content of this chapter.

Instead of the notions of 'discovery' and 'revelation' applied within objectivistic paradigms to describe novel insights at the level of scientific and theological explanatory schemes, respectively, the concept of sole 'invention' is used to describe the same process in

constructivist models of experience. However, the co-creational thesis implies that neither purely subjective invention nor objective discovery would correctly represent ‘discovery’ events wherein mutual creativities of ontological features of the world and epistemological attitudes of the being are inseparably coupled. The same subjective/realistic inextricableness of ‘interpretational’ and ‘representational’ aspects may be confirmed as valid for every perception, reflection and description. Experiential qualities correspondingly arise as the products of the co-creational, observer/reality interaction, and the prospect of comprehending intrinsic, observer-independent qualities (that would be identical to Immanuel Kant’s concept of *Ding an Sich*) of any natural system may be from this perspective characterized as futile as attempts to hear the sound of ‘one hand clapping’ from the famous Zen koan.

Biological structures are not able to perceive anything that is not a sensual difference. Cognitive information may be, therefore, described in terms of differences in the primary perceptual experiential substrate, and correspondingly regarded as the line of intersection of two otherwise imperceptible sections. As far as the speculative and reflective cognitive domains are concerned, Gregory Bateson’s imperative that ‘relation is always the product of double description’⁴ may be recollected as a reminder of the fact that each individual descriptive perspective is analogous to a single eye, whereas only comparisons between at least two descriptions (i.e., perception results that come from two eyes) may yield relational experiences (i.e., of a new visual level, such as the spatial perspective in the case of binocular vision). On the basis of such an idea of dual creational sources as implicit in emanation of every cognitive information, numerous instances of incongruence in human understanding of experiences might be resolved. The senses of loss of personal identities and profound existential meanings induced by relying on epistemological backgrounds that correspond to fundamental assumptions of either scientific or religious conceptual frameworks that fall into objectivistic or solipsistic extremes could be overcome by recollection of the co-creational idea that where there is one creational side of the world’s being and becoming acknowledged, there must be another one immanent as well. In simple theological terms, if there is God acknowledged as one creative side of the world’s becoming, human spirit as the other creative side must exist as well, and *vice versa*. In their co-creational encounters, experiential worlds come into existence. Such a stance was famously overseen by Arthur Schopenhauer who, drawing on the metaphorical imagery of Hindu religious tradition, pessimistically saw the world of his experience as a passive and inert ‘mirror’ to inner aspirations (named as ‘free will’) of his being³², instead of an endless ‘touch’ between his ‘free will’ and the divine and supervising power of Nature on the Way of the being’s spiritual evolution.

The co-creational perspective of experiential/natural becoming implies that indeterminacies and uncertainties present inevitable aspects of all cognitive schemes that pervade the natural order. Dynamic equilibration of certainties within uncertainties and *vice versa*, as well as awakening of quietly ringing glorification of knowledge in saying ‘I don’t know’, would present important tasks to be learned on part of the future scientists, artists and philosophers. Never-ending quests to reveal the hidden foundational traits of the co-creative sides of one’s being and Nature reflect cognitive aspirations that prevent the wheel of evolution from stopping to spin. From here on, one of the key existential paradoxes can be illuminated: only searching after the fundamental questions that have no permanent answers can keep cognitive systems in balance on a continuous evolutionary walk along the tightrope of conscious experiences³³. An important observation in relation to such ‘tightrope walking’ balance is connected to the fact that only through alternate falling towards complementary sides can one maintain the trend of

continually advancing along the line, whereas permanent stabilities would correspond to sterile standstill positions. This is neatly shown by Tai-chi-tu symbol, which represents natural balances as dynamic states permeated with a continuous overflow between complementary poles that never achieve simple, static and permanent equilibriums in their interaction.

Cognitive and communicational guidelines that have been evidenced as convenient and beneficial in relatively long terms and broad interactional contexts are in general typified not by accentuations of individual poles included in the problematic polar confrontations, but by an emphasis of the dynamical maintenance of their harmonious and productive polar relationship. Acceptance of experiential qualities as emanations of only one of their co-creational sides initiates either solipsistic or objectivistic cognitive imbalances; on the other hand, considering experiential details as fruits of the genuine communication between the spiritual core of the subject and ontological foundations of Nature (i.e., God) naturally leads to cognitive open-mindedness and spiritual satisfaction as prerequisites for the informational progress of the being/environment co-creational interface. Consequently, learning about the epistemological pathways of one's thinking would enrich the being with the knowledge of ontological features of the world, and *vice versa*. As a result, inquiry over the co-creational threads that stretch between the deepest epistemological assumptions and aspirations of beings and hidden features of the underlying natural order during the unfolding of their experiential worlds can be said to have presented the basis for profound theological outlooks of all times.

Science as a metaphorical tower of knowledge

'It is the glory of God to conceal a thing: but the honour of kings is to search out a matter. The heaven for height and the earth for depth, and the heart of kings is unsearchable'

Proverbs 25:2-3

In accordance with the proposed co-creational nature of primary experiences, scientific concepts derived thereupon could no longer be reasonably regarded as universal representations of an objective reality. Rather, they may be accepted as metaphors, that is, humanly derived concepts applied in mutual coordination of human experiences.

A few examples of finding metaphorical inspiration for inventions/discoveries of solutions to various problems may be extracted from the history of science and given at this point. Albert Einstein came to the idea of modification of physical qualities of an observed system as it approaches the speed of light in relation to a given observational reference frame while moving away from Bern's clock tower in a tram³⁴. Descartes arrived to the idea of Cartesian coordinates while watching the flies buzzing in one of the top corners of his room¹⁷. Archimedes reportedly realized that the volume of an irregular object could be calculated by measuring the volume of water displaced when the object is submerged in water while he was taking a bath. As the story goes, he ecstatically jumped out of his bathtub and started running and yelling 'Eureka' through the streets of Syracuse. These and similar Eureka moments during human quests for knowledge present nothing but sudden metaphorical leaps between different levels of logical representation of natural phenomena. Revelations of sages, prophets and genii of human civilization have been seeded with such sudden, enlightening arrivals at magnificent ideas which would be used later as invaluable guidelines in numerous areas of human edification of the existing planetary order. In the course of his elaborate historical research of scientific

‘paradigms and revolutions’, Thomas Kuhn referred to these enlightening and logically untraceable sources of inspiration as complementary to arrival at novel scientific ideas using logical principles of reasoning³⁵.

Despite the fact that the use of metaphorical reasoning is strongly rejected in most areas of science, scientific communications would be literally empty without the use of metaphors. Not only picturesque representations of molecules, atoms and subatomic ‘particles’, but the very mathematical concepts that underlie the postulated principles of physics also present metaphors of the ‘modeled’ experiential reality. Beside their evident significance in the rational process of developing novel scientific ideas and concepts, metaphorical leaps between logically disconnected (or at least unforeseeably connected) levels of conceptualization are, nevertheless, regularly regarded as intolerable mistakes in the realm of scientific reasoning. However, in scientific fields whose objects of research are pervaded with complexities that prevent scientists from adopting standard investigation methodologies that dominate the physical sciences, narratives are routinely applied during research and stimulated through education. Ecology presents one such example among natural sciences, although numerous social sciences, including anthropology, sociology and psychology are currently witnessing strong incentives towards freeing themselves from the legacy of positivistic thinking. As such, they increasingly reflect the fundamental observer/observed dichotomy in the corresponding scientific descriptions and explanations, while at the same time they acknowledge the importance of narratives in scientific practice. It is important to note that such incentives might be in most cases identified not as attempts to ruin the long tradition of empirical research in science, but as the means to reach improved understanding of the method of science in general, as well as to attain the level of clearer, more natural and faithful and, thereupon, more inspirational forms of presentation of scientific ideas and results.

Numerous scientific concepts, including ‘evolution’ and ‘homeostasis’ - let alone the quasi-physical metaphors of ‘force’, ‘energy’, ‘tension’ and ‘power’ applied in social sciences⁴ - were derived through analogical inferences, rather than through application of the standard tools of logic alone. The whole field of systems theory and what is today called ‘the systems approach’ deals with such generalized concepts and relationships that can be applied in the context of qualitative characterization of a variety of natural systems. In order to mitigate the trend of excessive employment of simple-minded and purely empirical methodologies (that, for instance, work well in the domain of physical sciences) in the research of complex biological, physiological and social systems that are governed by immeasurable emergent qualities, the merits of systemic, so-called ‘common sense’ reasoning should be signified, as in accordance with the following Martin Heidegger’s predictions: ‘Thinking in future would not be philosophy anymore. It has to descend to simplicity of its foregoing essence. Thinking condenses language into simple narratives’³⁶.

Philosophical systems that have comprised the cultural foundations of the history of human civilization were, as a matter of fact, far from being unsusceptible to employment of analogical relationships. A particularly impressive example may be Friedrich Hegel’s analogous correspondence between the dialectical method as the proposed basis of epistemological evolution of knowledge and the same method assumed as intrinsic to the ontological evolution of being and life. According to the latter parable, the initially omnipresent monistic Nature as a dialectical thesis divides itself into a multitude of beings, entities and perspectives as a dialectical antithesis, producing observer/observed dichotomies thereby. Eventual realization of the all-pervasive unity of being and recognition of one’s ‘absolute spirit’ as reflected in each

experiential detail invokes an enlightening synthesis whereby the being becomes one with the world, inducing novel evolutionary aspects of the natural order to arise. ‘Spiritual development is abandoning one’s self, detaching from it and yet reverting to it... Absolute spirit is the one who from eternal and self-identical being becomes other to itself and that other recognizes as the very self’³⁶, Friedrich Hegel claimed in support of this metaphysical idea, which had originally resided in the ancient Hindu concept of division of the ontological world to Brahman and Atman who are, according to the Vedic scriptures, to become united in the final stages of one’s spiritual evolution.

A few examples may be provided in order to illustrate that even the empirical tradition of conventional science has not been perfectly immune to analogical inferences. In general, whenever a descriptive or explanatory reference to observer is lost in favor of an objective representation of scientific data, a logically forbidden jump from the level of epistemological statements, inherently related to the subject’s experience, to the intangible and directly imperceptible level of ontological relationships is performed. The language of modern physics, including the descriptions rooted in the conceptual apparatus of quantum theory, is indeed abundant with such ‘irrational’ leaps. Besides the routine popular scientific misrepresentations of experimentally observed physical events, many other epistemological-to-ontological analogical ‘leaps’ can be mentioned as pervasive in the modern scientific interpretational practice, and correspondingly notified as imminent threats for the epistemological clarity of both the scientific and casual understanding of the depicted events. Quantum wave function as an epistemological superposition of all the possible states of an investigated system has, for example, frequently been presented as an ontological quantity, irrespective of the observer’s reference frame. Einstein-Podolsky-Rosen experiments have been employed for the purpose of evidencing indications that an observer might correlate the states of infinitely distanced particles, not necessarily implying thereby that the particles become mutually influenced at the moment of observation (i.e., wave function ‘collapse’), as has been proposed in the models of ontological nonlocal physical effects³⁷.

The epistemological, so-called ‘weak’ Heisenberg’s uncertainty principle might be, however, regarded as only a quantum physical manifestation of an all-encompassing systemic principle according to which each and every observation necessarily modifies the state of an observed system, and as such disables perfectly neutral and objective observations. Analogous to the fact that from the elementary physical perspective an exchange in energy content between an observer and an observed system presents a necessary precondition for the observational process to occur, the observer’s assumptions in any social interaction are to some extent reflected in the derived conclusions and thus prevent any observer from gathering insights into perfectly ‘objective’ and ‘real’ states of the observed systems. Just as an infinite array of calibrations of measuring instruments would be required to ensure a hypothetically perfect measurement, an ‘abductive’ causal circle in which beginnings (e.g., initial assumptions) and ends (e.g., derived conclusions) eventually meet would be formed in one’s pertinacious striving to attain the illusory ideals of a perfectly precise and objective observation. On one hand, such closed causal circles as inescapable consequences of the co-creational nature of human existence and reasoning present nightmares for logicians’ dreams of explaining the experiential reality in terms of perfectly consistent and complete logical models; on the other hand, however, they may promote enlightening realizations that one’s ‘subjective’ initial assumptions are being continually reflected in seemingly objective and observer-independent perceptual products and mental inferences, while ‘realistic’ experiential patterns are being incessantly reflected in the subject’s

‘idealistic’ products of imagination and reasoning, so that the two co-creational poles – subjective and realistic – dynamically reflect each other in the course of the evolutionary spin of the wheel of life.

As a consequence of the co-creational character of cognition and the corresponding balance between uniqueness and commonness that reflects the entwined subjective and objective features within every experiential detail, cognitive needs and progressive pathways similarly possess attributes of both specialness and equality for each particular being of the world. Accepting such a cognitive uniqueness of everyone presents a spontaneous invitation to approach a novel form of tolerance and fosterage of a blossoming diversity of opinions and worldviews. Such an attitude that implicitly acknowledges the impossibility of ‘instilling’ personal knowledge into other people’s minds, coupled with prudent cultivation of communicational aspirations to provide not directives and commands, but merely directions of thought and signs that would in relation with the autonomously set ‘compasses’ of aspirations within other beings’ hearts manage to orient them towards the right ways (that is, whilst respecting and preserving the inner cores of the other beings wherefrom the ‘sun’ of personal responsibility shines), can present an enormously prosperous starting point for education in the coming era. By adopting the co-creational nature of experiences at the foundations of our worldviews, a prolific fosterage of educational tolerance and productive balances between self-responsible individual creativities and a respectful adherence to the supplied ‘guiding stars’ might gradually take place of objectivistic interpretations of human feelings and cognitive patterns, and the subsequent manipulative communicational attitudes arising from the objectivistic assumption that creatures passively absorb information they become exposed to. Whereas divine human qualities may gradually disintegrate when supported by either solipsistic or objectivistic cognitive foundations, their natural blossoming may be envisaged in the cognitive world pervaded with an awareness of the wondrous threads of the ‘guiding voice’ of Nature as incessantly posed as a response to the subject’s deepest aspirations in the course of their mutual, co-creative outlining of the patterns of the experiential world along the way of the subject’s ethico-aesthetical advancing towards the Hegelian spiritual synthesis and becoming One with Nature. Instead of being sustained in isolated states of epistemological panic or boredom, immanent in the cognitive worlds of either constructivist solipsism or objective representationalism, from the epistemological bases of co-creational nature of experiential phenomena one would readily run out to see how the world looks from the eyes of another, and would get back to one’s own eyes tremendously wiser and wholer.

The proposed Philosophy of the Way is in concert with the key role of changes of perspectives in every systems approach, in a way that besides approaching and blending, timely distancing and diverging presents another, complementary aspect of comprehensive learning about the encountered systems. The cosmological concept of time may, as a result, be deduced from the idea that Nature and its cognitive ‘subsystems’ need to continually switch perspectives in order to avoid being trapped in singular ‘blind spots’ of intangible epistemological propositions and attitudes and ‘hidden’ ontological views. Systems approach is all about changing perspectives and viewing the investigated systems from as many perspectives and organizational levels as possible, and eventually discovering analogical ‘patterns that connect’ diverse domains and relationships into meaningful systemic wholes. ‘Break the pattern which connects the items of learning and you necessarily destroy all quality’⁴, Gregory Bateson wrote, defining the beautiful concept of ‘pattern that connects’ and implicitly suggesting that every type

of learning occurs through metaphorical comparisons and perceptions (i.e., reflective co-creations) of similarities between various distanced natural systems and domains.

Accepting scientific and religious descriptions of the world as true representations of an objective reality, rather than pragmatic and ethical narratives, respectively, has caused tremendous problems throughout the history of human civilization. The roots of appearance of numerous intolerant fundamentalistic attitudes may be found in oppressive propagations of specific ideas as universal and objective truths. Calamitous consequences of identifying written knowledge not as sets of contextually shaped, ethically and pragmatically co-orientational metaphors, but as images of an objective and universal reality have ranged from the persecution of Christ and Inquisitional torture of 'heretics' to contemporary fundamentalistic religious intolerances to subtle but additive antagonistic effects arising from daily communicational references to superficial behests or formulations whilst forgetting to cultivate implicit vows at the epistemological 'bottom of one's heart' and neglecting the fact that 'the sting of death is sin, and the strength of sin is the law' (Corinthians I 15:56). In that sense, it is important to keep in mind both Heinz von Foerster's imperative that 'truth is war'¹⁴ and Alfred Korzybski's proposition that 'map is not the territory'. Class members and classes, as much as names and the things named, should correspondingly not be interchanged in scientific and ordinary descriptions since they belong to different 'logical types', as Gregory Bateson pointed out⁴. Comprehensive systemic reasoning is accordingly based on application of analogical reflections and correspondences rather than on 'blind' identifications of miscellaneous mapping representations of experiential/natural order with their corresponding 'territories'. As implied from the 'common sense' observation of linguistic constructs as inevitably imperfect reflections of the subject's emotions and mental landscapes that he attempts to convey to others, the audience should always be aware that they should not "bite his finger off", but look for the destinations of feeling and thought that it points at. Needless to add, an enlightening discovery it is when one realizes that these destinations quite well reflect their deepest origins in terms of the presenter's profoundest aspirations, visions and emotions in communication with the spiritual substrate of his experiential reality.

Despite the fact that every form of knowledge is metaphorical in nature, and subsequently predisposed to satisfy not the criterion of truthfulness, but only the one of viability (with the corresponding references to pragmatic usefulness of its utilization), the trend of erroneous identification of human ideas as the only 'true' representations of natural systems and events does not seem to abate and evidently keeps on impressing serious adversities upon the cultural footprint of the human race. In attempts to reverse this trend of hostilities provoked by confrontations of diverse worldviews over their exclusive privileges for the position at 'the ground of truth', which, needless to add, only one truth-claiming worldview at a time can occupy, one may recollect an opinion presented by Vivekananda in his assertion that 'the external world is simply a suggestion, a possibility, which urges us to study, although the real object of our investigation is the mind'³⁹, and Spinoza's claims that 'all the explanations commonly given of nature are mere modes of imagining, and do not indicate the true nature of anything, but only the constitution of the imagination; and, although they have names, as though they were entities, existing externally to the imagination, I call them entities imaginary rather than real'³⁸. The pathways of imagination by which experiential/natural world is described and its understanding sought, therefore, present not truthful representations of a 'real' and objective world that by default preclude the relevancy of other similar models, but subtle indicators of understanding of human understanding and metaphorical depictions of temporary stages in an

endless evolutionary search of humanity for ‘hidden’ epistemological and ontological sources that in their togetherness co-create the experiential worlds. These two ‘hidden’ experiential sources may be represented as the deepest ethical and spiritual foundations on the epistemological co-creational side, and the ‘fountainhead of God’ on the ontological one, the finding of which has ever since comprised the most profound theological, metaphysical and cosmological adventure of the human mind.

At this point, I will draw an analogy between map and its territory on one side and the relationship between science and objects of its inquiry in terms of the co-created experiential/natural worlds on the other. Just as a map presents a set of useful co-orientational guidelines, science comprises coded directives for mutual coordination of human experiences. This is because from the pragmatic point of view the value of scientific concepts can be estimated by the effectiveness of their utilization for the purpose of mutually evolving the face of the planet and inner human sources of inspiration and worldly impressions. Then, in order to communicate in unison, both the people communicating around the map and within the scientific society need to be equipped with the knowledge that enables construction of convenient semantic attributes from elementary ‘textual’ features - such as letters, colors and numbers on a geographical map or mathematical operations, correspondence diagrams and physical quantities within the actual scientific descriptions - and as such provides conditions for an efficient communication and successful coordination of human experiences. However, maps are not true representations of natural order, but sets of potentially pragmatic signs and directives. All the data that can be read from a given map present subjective emanations of deliberative forms used to facilitate mutual co-orientation of human experiences. The metaphorical, pragmatic and conventional background of the map elements and the context of its application may be easily forgotten and mistakenly identified as equal to the features of the represented territory, whereby the aim of constructivist and many other religious and artistic approaches to communication of meaning is exactly to shatter that illusion.

Not a single map could have all the implicit assumptions denoted, so that the meaning of its constructor perfectly matches the one of a reader. ‘ $1 + 1 = 2$ ’ would present a mathematically meaningless statement had previously defined concepts of numbers and basic mathematical operations been neglected and implicitly unacknowledged, whereas if one contemplated on how far he could advance in decoding Morse’s code by means of Morse’s code only¹⁷, the knowledge on why participation in objective and unambiguous communication is both theoretically and practically impossible should gradually dawn on him. Just as an incessantly novel construction of a map in which the position of this very map of a territory needs to be drawn ought to be performed in order to satisfy the criterion of perfect mapping (note that Gödel’s incompleteness theorem may be depicted in this way), and just as an infinite array of calibrations of calibrating instruments is required to perfectly calibrate the primary measuring instrument and satisfy the ideals of perfect measurement (note that ‘weak’ Heisenberg’s uncertainty principle may be depicted in this way), the perfect definition of one language would require all of its implicit characteristics to be explicated by means of another language, which would again pave the way for an infinite explication array. Just as an observer could not touch the rainbow because it always moves in synchrony with his eyes, implicit assumptions, in general, could never be completely explicated since there is no neutral perspective from which they could be described as objective patterns. This brings us to the need to modify the objective nature of language, including the actual scientific frameworks applied for the representation of meaning transmission processes.

The co-orientational character of language

'Don't bite my finger, look where I am pointing'

Warren McCulloch

It may be said that the direct implication of an idea that languages are indicative systems of manipulation of symbols that represent entities, qualities and relations of an objective reality is the Aristotelian idea of feasible establishing of criteria of truth for every language expression, and *vice versa*. However, an obvious weak point of such an approach is the elimination of references to the subject's framework of understanding, as well as to the manner and context of provision of the assertions, even though these elements are indispensably included in outlining the ethical quality of linguistic impressions and expressions. Despite the fact that interpretational contexts in general define qualities of observed systems, their elimination is a necessary requirement for applying composition and decryption rules that aim to reach and transmit the 'true' character of 'objectively' described experiential features and linguistic expressions, respectively, and achieve the ideal of systematic connotation of meaning. However, 'medium is the message' are the words of Marshall McLuhan that may still ring in our heads, reminding us that the reflective process of co-creation (i.e., partly inventing, partly discovering) of meanings is inherently dependent on semi-subjectively applied interpretational contexts. Such a conception is reminiscent of the inevitable 'realistic' description of physical qualities in terms of relations of specific imaginary entities with their respective environments, and of the 'subjective' context of perception and interpretation of experiential patterns as a 'medium', i.e., a 'frame' which co-defines the preciousness and beauty of the cognitive 'picturesque' moments. The observable qualities of investigated systems may be regarded as emanating at the points where such ontological (objectively interactional) and epistemological (subjectively interpretational) contextual spheres intersect. The idea that 'context is the mother of content'⁴⁰, including the ethico-aesthetical perspective according to which the more one gives, the more one is and the more one indeed has, was expressed as a central metaphor of the 1946 Christmas movie 'It's a Wonderful Life'.

The classical hermeneutical conception according to which fulfillment of the criterion of truthfulness for any particular linguistic assertion is unachievable due to a prerequisite implementation of initial assumptions that are being continually recreated by the utilization of the same language may be accompanied by the observed impossibility of satisfying the criterion of truth due to subjectively interpretational and metaphoric character of all experiential stances and products of cognitive reflections. Also, instead of being attributable with an inherent character related to provision of 'true' representations of an objective and observer-independent experiential reality, language presents a form of action, as can be evidenced by realizing that all real-life linguistic assertions are not passive affirmations or negations of 'objective' facts, but emanations of implicit commitments towards benevolent mutual coordination of experiences. Statements that reflect expressions such as 'I hope to...', 'I promise to...', 'I believe in...', or 'Throw me the ball' may be considered not as true or false representations, but as instances of invitation to the acts of mutual co-orientation towards unobvious experiential aims. In light of the implicit presence of commitments, undertakings and silent vows in almost each verbal act, linguistic communications possess an underlying potential for mutual improvements of

understanding and enrichment of co-creatively weaved ‘patterns that connect’ individual beings along their co-evolutionary paths.

In order to illustrate the co-orientational nature of language, Terry Winograd and Fernando Flores offer a simple example wherein person A asks person B whether there is water in the fridge¹¹. If person B by water means chemical composition attributed to water, even if there were no drinkable water in the fridge, he may say ‘yes’, thinking about molecules of water adsorbed on food packages, or circulating within the cooling coils. Therefore, it is not only meanings of the words that could not be expressed independently of the context of a particular communication (defined by aspirations of the communicators), but each linguistic communication requires a ceaseless cultivation of sincere implicit tendencies to understand other beings and of an implicit zeal to create responses that may orient others toward the ‘right’ ways. Erasing co-orientational aspirations in ordinary communications is equivalent to paralyzing potentially creative effects thereof as well as degrading basic human qualities and responsibility-bearing relationships in the long run. Language and understanding from this perspective obtain a socially centered character and consequently transcend the imminent solipsistic dangers of the inevitably subjective interpretational character of the processes of perception, reflection, acquirement of knowledge and participation in conversational communications. The starting points of constructivist theories and the theory of autopoiesis, according to which ‘everything said is said by observer’, could be correspondingly complemented with Heinz von Foerster’s imperative, which states that ‘everything said is said to an observer’⁴¹. Languages could accordingly be comprehended not as a means for an objective representation of the world and experience, but as pragmatic conceptual frameworks applied for the purpose of mutual co-orientation towards common and compatible meanings reflected in individual experiential worlds, and consequently as a means to mutual nourishment and upbringing of implicit, aspirational and inspirational creative essences of human beings.

Because language as a communication tool in large extent modifies subjective thinking patterns, each reasoning process may be attributed with semantic backgrounds that have been spontaneously formed through the subject’s existential immersion in a specific social tradition of communication, behavior and understanding, and imitational learning from the particular patterns of expression dominant in the given tradition. Appreciation of the social character of languages provides possibilities to overcome potential incompatibilities and autistic subjectivities of individually centered interpretations, and expand the reference scope of one’s comprehension in language towards embracing the overall historical tradition of the actual society beyond the immediate influences on the subject’s cognitive and rational development. Each type of knowledge, as either expressed through language or consciously dormant in relation thereto, may accordingly be considered as neither completely subjective (i.e., independent of social and biological backgrounds of one’s cognitive origins) nor thoroughly objective (i.e., independent of subjective interpretational aspects), which presents one more reason in favor of conjoining the extreme standpoints of constructivist and objectivistic philosophies in a Middle Way concept of co-creational organization of experiences. Just as contemporary preachers could be heard emphasizing the balance between ‘truth’ and ‘grace’, so should co-orientational interactions in the linguistic domain reflect a communicational Middle Way wherein expressions brought forth partly indicate ‘divine and hidden truths’ and partly awakening divine longings to set on a ‘crowning quest’ from the profoundest depths of one’s heart, thus, as it is the case with the co-creational concept of perception, initiating mutual drawing of common meanings as ‘paths’ that would lead all to ‘sun-rising’ realms of shared experience.

Many debates might be transformed from conflicting and discordant to productive and harmonious through propagation of the idea that meanings related to linguistic expressions are not universal and the only legitimate, and that every reference to absolutely true descriptions of natural phenomena implies certain arrogance⁴² that cuts through many potential co-orientational links that may be fed only by a constant influx of mutual trust and confidence. By accepting language as a tool for the mutual coordination of experiences, phrases and clichés that were spontaneously formed through their repetitive use (thereby fading the link between ‘map’ and its ‘territory’) might be spontaneously transformed into sincere and genuine assertions, gestures and other physical expressions. Contrary to the idea of ‘understanding’ as providing ‘relevant’ responses to questions and dilemmas arising in conversation, we may be sure that only by means of aspirations to become one with the worldviews and experiential patterns of other beings can we truly bring benefits to social communications⁴³.

The role of parables in scientific practice and common reasoning might be naturally acknowledged as essential with the transition from the objectivistic apprehension of language to its denotation as a co-orientational pragmatic tool applied for the spiritual and informational enrichment of the human society. Analogies and metaphors are immanent in all religious scriptures, where they present subtle threads whose careful following may through ‘miraculous’ metaphorical leaps between the imagined levels of natural organization invoke a sense of all-encompassing relevance and an overwhelming unity of being. Semantic and aesthetic patterns that arise from interpretations of narratives are results of metaphorical projection of relationships between elements of the story onto those comprising ‘real-life’ events. Due to the irreproducible character of recreation of interpretational contexts, even identical relationships present within a narrative may lead to an infinite number of interpretations thereof, which explains why some familiar artistic pieces occasionally surprise us with novel sources of inspiration and previously unnoticed meaningful directives. Comprehending religious works through the lenses of universality, objectivity and literalness may lead to realization of the image of God emerging from the Biblical stories as conditional and cruel, instead of ceaselessly pointing at the path of unconditional love and respect. The lives of many sages, including most notably Jesus Christ, have in fact presented resolute battles of reason against such literal interpretations of the sacred scriptures.

Everyone’s favorite mantras, verses or stories are, therefore, not semantically encrypted once and for all, but may be each time revived under new contextual ‘skies’ and thereupon lived countless times. Similar to experiential qualities that rest neither only in the objective natural order nor only in the solipsistic mind of the observer, but on the co-creational ‘way’ that arises at the intersection of these two co-creative poles, semantic meanings interwoven in linguistic communications rest neither objectivistically in textual or phonetic presentations only nor solipsistically in the interpreter’s mental sphere only, but on the relational threads spread between the interpreter and the encountered environmental pattern of language. And the wider and more diverse the spectrum of metaphors ascribed to linguistic relationships, the more satisfaction and amusement linguistic communications would bring to us. Metaphoric richness of the threads of meaning that spread from individual words and linguistic constructions presents the reason which explains why native languages wherein individual words are related to more diverse spectra of metaphorical meanings present more natural, comfortable and intimate linguistic communicational pathways in comparison with other, non-native languages. Each creature is, in the following sense, endowed with unique cognitive abilities to comprehend and express meanings, so that self-praising and self-dignifying attitudes, invoked by seemingly

immaculate and peerless personal ideas, may correspondingly cede their place to humble and respectful wondering over the patterns of unknown that quietly embrace the potential of shaping deep ethico-aesthetical communicational features of one's being in the world.

The misleading objectivistic assumption that meanings of linguistic expressions rest solely within themselves is analogous to the idea that scientific descriptions and explanations can be correctly expounded and applied without referring to properties of the observer. Verbal communications could not be considered as analogous to any artificial system of communication, because the latter rest on predetermined encryption codes, whereas the former is learnt spontaneously, by being immersed in a given social tradition of experiential coordination, and consequently does not possess objectively established decipherment rules. A child begins to learn language by associating particular sounds and voices with specific sensual experiences, which does not only infuses an inherently subjective element in its comprehension of language, but in contrast with the machine codes, continually broadens one's space of potential meaningful linguistic interpretations throughout the rest of one's life. Words identical in syntax or sound, therefore, inevitably invoke unique impressions in each one of us; consequently, the semantic processes of reading and listening could be considered not as dominated by interpretational abilities to penetrate into objective and fixed meanings of the given assertions, but as the ones of semi-subjective and semi-realistic co-creation of meaningful insights. Whereas the creator of a given linguistic expression limits a potentially endless space of possible interpretations, the reader 'breathes life' into those words through personal interpretations, so that the process of linguistic or any other form of communication becomes a co-creational encounter, perfectly analogous to the previously proposed co-creational nature of perception. As Hans-Georg Gadamer pointed out, this process of communicational co-creation of meanings may be depicted as an interaction between a horizon provided by the text and a horizon that an interpreter brings forth, whereupon these horizons could be identified as implicit foundations of creation of meaning that are partly subjective, but partly belong to the social linguistic tradition¹¹. Such an analogy between the co-creational character of linguistic communications and the inception of primary experiences may present a crucial reason behind proposing correlations between the essential aspects of artistic creation and divinity of the co-creational teaching force of Nature. Metaphors of encounters, meetings and facings may be, therefore, shown as more convenient for describing linguistic communications than the metaphor of computational memory inputs and outputs. Numerous 'templated' expressional patterns and beliefs that meanings could be potentially stored or possessed may be overcome by regarding textual interpretations not as passive observations of universal and objective meanings, but as active processes of semi-autonomous co-creation of meanings. As Japanese poet Saigyō stressed, 'Although I do write poetry, I do not consider it as written'⁴⁴. Because they are co-created in relation to contextual spheres permeated with unique interpretational networks of abstract propositions and experiential phenomena that serve as the bases for metaphorical reflections, particular meanings could not be transmitted and shared in identical forms, but only pointed to, so that the juxtaposed meanings may be in the most favorable cases considered as congenial, harmonious and compatible.

This point of view, however, does not imply that the continuing development in the domain of formal languages, such as mathematics or computer languages, is useless. Computers that are built to mimic the rules of logic present operational media with the potential of enrichment of social communications, although in order to sustain them in form of not blind masters, but faithful servants of human visions of social welfare, it becomes essential to recognize that 'map is not the territory' and to correspondingly disable formal languages from

assuming the character according to which they might be employed as true reflections and absolutely adequate motifs of human comprehension of the world.

Linguistic or any other types of communication, therefore, do not comprise a purely objective transmission of meanings that could be modeled consistently within the framework of Claude Shannon's information theory. Languages are socially invented tools used for mutual co-orientations by means of implicit commitments, dedications, pledges, promises, assurances, intentions guided by considerateness, attentiveness and provisions of directives and signs that point towards the 'right' ways. With the shift from ideas that meanings reside objectively in the sole information to the ones that perceive meanings as co-created in the encounter between composers of the given expressions and their interpreters, the evaluation of purpose and meaning of information naturally shifts from superficial attention paid to an explicit repetitive precision of performances and transmission of information to cultivation of epistemological settings that provide the basis for semantic encounters of essential and implicit cognitive features of beings in communication. From such a standpoint, it may become clear why noise and imperfect performances could never degrade the beauty that 'resides' in truly valuable pieces of art.

Whereas verbal conflicts between parties pervaded with mutually benevolent intentions would keep on existing for as long as the language is accepted as fundamental, *a priori* means of communication, becoming aware that language is only a pointer at mutual viabilities in the frame of social, 'symbiotically' structured semantic conjunctions may invoke more respectful and tolerant communication attitudes that would foster joyous encounters of cognitive diversities. From such a perspective, hope in attaining an enlightened communication age wherein human ethics would be not verbally explicit and consequently superficial, insincere and phrased on frequent occasions, but verbally implicit and thereupon inevitably thoughtful, deep and honest, could spring into life.

A few lucid guidelines from the history of human reasoning may be provided as an inspiring support for such a hopeful perspective. 'The heart of fools is in their mouth, but the mouth of the wise is in their heart' (Sirach 21:26), presents one of the most amusing Biblical verses that perfectly fits the proposed point. Ludwig Wittgenstein might have reminded us that 'it is clear that ethics cannot be articulated; ethics is transcendental; of the will as the subject of the ethical we cannot speak'; as well as that 'there are, indeed, things that cannot be put into words; they make themselves manifest; they are what is mystical'⁴⁵. Jackson Pollock valued 'expressions of emotions, and not only their illustrations'⁴⁶. When asked what her dance had meant, Isadora Duncan replied that if she had been able to describe it, there would have been no purpose dancing it, whereas Samuel Beckett said that if he knew what his works were all about, he would not have spent his time writing them in the first place⁴⁷. But the whole thesis presented herein is best illustrated by the lives of some of the most influential persons from the history of the world who had not left a single written note as a message to the coming generations. Gautama Buddha, Confucius, Socrates, Pythagoras, Jesus Christ and the prophet Muhammad are some of them who were showing the right way by their lives solely. Thomas Aquinas had used to write fervently until he realized during one mass that 'everything I have written so far looks to me like a straw'⁴⁸. Luckily, when attempting to cross the border and permanently leave the country, Lao-tzu was stopped by a guardian and forced to write down his teachings before he was let through, which is how wonderful Tao-te-ching, the only work Lao-tzu ever wrote, came into existence. And in the middle of it, Lao-tzu writes that 'nothing can be compared to the teaching without words' (Tao-te-ching XLIII). 'For I through the law am dead to the law, that I might live unto God' (Galatians 2:19), were accordingly the words of Paul the Apostle. The

metaphorical nature of every sort of knowledge implies the same thing – that application of knowledge defines the scope of its meaningfulness. Or as Confucius noted: ‘The essence of knowledge is, once you’ve got it, apply it’. Only through such an attitude will we differ from the scribes and Pharisees for whom Jesus said: ‘All therefore whatsoever they bid you observe, that observe and do; but do not ye after their works: for they say, and do not’ (Matthew 23:3).

Deriving human ethics from a metaphorical observation of natural phenomena

‘Split a piece of wood; I am there. Lift up the stone,
and you will find me there’

The words of Jesus Christ (Thomas 77)

Ethics of human behavior may be inferred in a simple, and yet immaculate manner from a pure and imaginative observation of natural phenomena. For example, the autopoietic circular arrangement of all biological systems⁴⁹, from autocatalytic and metabolic cycles to individual cells to complex organisms, ecosystems and the biosphere, may be reflected upon the substrate of behavioral relationships in the social domain. Namely, as analogous to autopoietically structured biological systems, building each other up through daily social and ecosystemic communications and creative actions can be regarded as a fundamental ethical principle for acting in truly sustainable and harmonious ways. Then, there is the example of the Sun. As it shines and brings the source of life to the Earth, it does not ask for reciprocity. Deeply oriented inward, burning its inner essences, it lives in desolation and darkness, and yet makes the whole planet cheer with life. Just as the physical entities are in the framework of quantum field theory represented as patterns of relationships through which the entities may be related to the rest of the world, more complex natural systems, including individual beings, may be accordingly represented as complex sets of harmonies through which they ‘give’ themselves to the world. ‘There is no I, but I am’, as Ferdinand Ebner said, reminding one of the nature of divine identity (Exodus 3:14) and of the ethical guideline ‘to give and to be is more than to have’, naturally derived thereupon. ‘The sky and the Earth are long-lasting; that is because they live for the others; that is why they are endless’ (Tao-te-ching VII), Lao-tzu claimed, whereby the image of the crucified Christ with his head bowed and hands stretched symbolizes a similar Sun-like inwardness that glows with its burning essence to the world. Such a balance between focused, meditative inwardness and an unconditional bestowal of spiritual treasures presents a perfect ethical guideline that emanates from the co-creational organization of experience.

By observing any experiential/natural detail or aspect, one may find enormous sources of inspiration and initiate problem-solving avalanches of logical thoughts through the discovery of appropriate systemic, analogical spurs. This can be neatly shown by invoking a simple example of watching a tree. First of all, a tree consists of invisible roots on one side and a visible stem, branches, leaves and eventually flowers and fruits on the other, which may metaphorically correspond to spiritual essences and sources of cognitive being and becoming, including emotions and holistic (so-called ‘inner’) qualities on one side, and apparent physical features on the other, respectively. All natural systems, from living organisms to clusters of stars to technological devices, could be described in terms of the interplay between their apparent and measurable features on one side and hidden and immeasurable ones on the other. The area under the ground pervaded by the root system of a tree typically covers much larger volume compared to its visible parts, indicating that humans are as well mainly composed of intangible and directly inaccessible qualities, whereas the apparent qualities expressed by their behavior play only a

minor part in manifesting their existence. But considering how children usually draw trees by depicting only their obvious outlines and disregarding the invisible roots⁵⁰, the existence of serious flaws in the social education methodology might be anticipated by analogy.

If one were to search for those invisible sources by digging, touching and directly affecting the sensitive and concealed patterns of the tree, the essence of the tree would become hurt, extending the damaging effects to its visible parts as well. Care about a tree is reflected not in one's rummaging and disrupting its inner parts, but in irrigating its soil and hoping for the water to reach its roots. Just as true care does not dwell in swilling the tree's leaves and branches, but in irrigating its hidden root system, the humane care too lies not in saying words of sweet and pleasant literal meanings, but in providing implicit care, independent of the meaning of words, although still somehow dormant in them. 'The right words need not be true words and the true words need not be right words' (Tao-te-ching LXXXI), were the famous words of Lao-tzu that neatly describe the need for such an implicit ethics that does not reside within the literal meanings of the words that we use, but in tendencies, intentions and aspirations that invisibly stand at the root of all our expressions and worldly actions. However, even then we would never know whether the droplets of water that fall on the soil would ever reach the roots, which reminds us of the Buddhist teaching that 'we cannot give a way to someone, but only point at it', as well as of the overall set of ethical consequences that inevitably follows the proposition of the metaphorical nature of every form of knowledge.

Trees in a single ecosystemic community thereof, such as a forest, form a thoroughly connected network of roots so that they nourish each other through it⁵⁰, which indicates the existence of similar inexplicable connections at the level of social and other biological communications. Beautiful analogies may be also offered by tiny stalks of grass that belong to some of the most adaptable plant species especially because of their high proportion of root surface to the overall plant volume⁵¹. This may remind us that when one is deeply ingrained in invisible qualities of human ethics and spiritual virtues and also humble in one's expressions, one becomes exceptionally resistant to the careless acts of the surrounding, always finding ways to rejuvenate one's creativity after some stomping feet squash its visible parts. There is a Zen story⁵² which describes a visitor to a Zen monastery approaching master Joshu with a question: 'Master, everybody talks about your bridge, but as I see, it looks more like an old stump. How come?'. 'You see the wood, but you do not see the foundations. Over it horses pass, over it donkeys pass', vigilantly answers Joshu, inviting us to think how the ideal of a sage ought to be comprised in an inner building of the implicit, invisible foundations of understanding and orienting that help other people cross the troubled waters on their spiritual paths.

Then, we can observe some effects of tree growth and draw them upon the ethical substrate of human behavior. One of the most beautiful of such effects may be the process of evapotranspiration of relatively large trees. Namely, a tall tree needs to constantly excrete small droplets of water on the surface of its leaves and let them evaporate in order to sustain the osmotic pressure by which the columns of water are being dragged from the root system of the tree to its higher parts. Similar to this, only generous dissipation of our precious qualities may sustain the flow of divine qualities through our beings. And in relation to one of the Christ's metaphors in Sermon on the Mount (Matthew 5:3), the poorer in spirit we are, the more spirit we will have, so to say. It is thus giving and shining with the pleasing grace that keeps the very stem and spiritual roots of our being strongly established and flexibly sustained. Not greedily keeping, but freely giving the droplets of water that will bring rain to some other thirsty trees and forests, presents the pathway to mutual sustainability, particularly when we know that in this way 'trees

form rain that forms trees'. As a matter of fact, all the ecological relationships may be depicted by circles wherein every cause presents an effect and *vice versa*, so that goodness, clemency and patience inlaid here would be reflected in an increasing welfare in some other distant parts of the world.

But when the trees grow too much in height, they may as well forget about the need to support the development of the small ones. Such was the case when the trees of oak and tulip forests had grown so big that their own seedlings could not survive in their shade, and were eventually replaced by shade-tolerant trees like the beech, sugar maple and hemlock⁵¹. The soil of Amazon forest, known as the planetary 'lungs'⁵³ and the Earth's 'air-conditioning' system⁵⁴, is not brightly illuminated and rich in composition, but rather opposite: it is the one with dark surface and malnourishing constitution. Therefore, the typical Amazon trees do not rise and grow quickly, but rather develop slowly but persistently. An ethical lesson we could derive from these relationships is that it is not well-protected, well-nourished and mild conditions that foster the growth of exceptional human characters, but rather the opposite – problematic and miserable circumstances that surround one's growth may predispose one to the development of extraordinarily creative traits. Shadowy doubts, sad empathies and crucifying dilemmas may be perceived as some of the prerequisites for the rise of the most beautiful inner sources of inspiration. In that sense, Immanuel Kant once observed that 'the light dove, cleaving the air in her free flight, and feeling its resistance, might imagine that its flight would be still easier in empty space. It was thus that Plato left the world of the senses, as setting too narrow limits to the understanding, and ventured out beyond it on the wings of the ideas, in the empty space of the pure understanding. He did not observe that with all his efforts he made no advance - meeting no resistance that might, as it were, serve as a support upon which he could take a stand, to which he could apply his powers, and so set his understanding in motion. It is, indeed, the common fate of human reason to complete its speculative structures as speedily as may be, and only afterwards to enquire whether the foundations are reliable'⁵⁵.

Also, it is not fast growth and quick understanding, but slow, humble and minute development that leads to cognitive brilliance. Or as Alexander Pope put it once, 'Some people never learn anything because they understand everything too quickly'⁵⁶. Systemic reasoning requires numerous analogous comparisons and a patient cultivation of inner inspiration before we get to meaningful parallels and 'patterns that connect'. Brilliant expressions and ideas could rarely be 'understood' (in terms of their metaphoric reflection onto imagined circumstances or events) at first glance; instead, their systemic character predisposes them to match innumerable life situations and show relevancy at miscellaneous domains of our abstractions and reflections of natural/experiential interactions. Similarly to the evening Sun throwing vivid and sparkling reflections across the sea surface, the reflections of our mind rapidly mix and match up the cards of various imagined situations and relations with the proposed ideas in a metaphorical search for significant meanings. And these stochastic processes of system(mat)ic searches for general metaphors and inspirational narratives on one side, and discoveries of relevant matches with personal experiences in the opposite direction, are in the frame of the evolution of human knowledge almost as miraculous as the evolution of contemporary life forms from the processes of gene transfection, reshuffling and mistakes in genetic replication. A divine inspiration in form of inherently guided, non-random intuition or epigenetic inheritance effects would in the former, mental evolution case and in the latter, biological evolution case, respectively, resolve the problems related to hypothesized random formation of miraculously organized biological and cognitive systems. In any case, placing a vigilant, curious and wide-awake attentiveness on the

epistemological pedestal of patience, calmness and serenity, illuminated by the knowledge that a long way leads to deep understanding of all important ideas and ethical attitudes, presents the key to wise, 'quick but slow' systemic thinking.

After sowing the land and planting new scions, a wise gardener does not expect the fruits of his marvelous work to immediately overwhelm the earth, but knows that sometimes whole generations must pass before people spot the subtle aftermaths of their ancestors' labor. The growth of a tree is to human observers a slow and unnoticeable process in real-time conditions, and we should therefore not impatiently expect that the rewards and praises for our ongoing efforts come too soon. Renunciation of valuing apparent and immediate praiseful responses to our deeds is one of the keys to attaining truly ethical stances for guiding our actions. Whereas little valuable deeds often induce quick satisfactions, this does not hold for the most valuable decisions and deeds in life. Kind acts and noble thoughts quietly and imperceptibly create effects in our mental, creative and ecological backgrounds. And instead of hurrying, shaking and drilling the tree so as to make it fructify quickly, by patient anticipation for its fruits to fall into our serene embrace the wise gardener spontaneously gives rise to a wonderful ethical background from which numerous gratifying accomplishments may flourish.

Finally, the tree never directly consumes its own fruits. Therefore, the wise gardener may know that his actions do not serve the purpose of bringing himself benefits and profits, but they ought to present acts of spontaneous giving and enlightening of the world, without asking for anything in return, similar to the aforementioned way of the Sun. And finally, a single tree during its lifespan branches, blossoms, fructifies and dies, creating many seeds that may sprout into new trees on the way. Maybe such nature of a tree's progeny formation reflects the overall spiritual order of the world, dominated by an endless creation of starry souls that through making earthly mistakes learn to become sunny sources of whole new worlds of experience. It could be also that our very beings during the existence continually sow the world not only with effects of our apparent actions and achievements, but with our deepest aspirations, ostensibly concealed emotions and inspiring thoughts, creating imprints of our deepest dedications upon innumerable global aspects of the natural and social order.

And here we will stop with numbering ethical ideas that may be derived from a simple and yet profound watching of a tree. Indeed, the ethical relationships derivable from observation of a single tree may be so many that 'even the world itself could not contain the books that should be written' (John 21:25). And numerous other natural details hide inexhaustible sources for the discovery of amusing natural patterns and everlasting Cosmic rules of divine behavior. As William Blake wrote: 'To see a world in a grain of sand, and a heaven in a wild flower, hold infinity in the palm of your hand, and eternity in an hour'. And although some may say that a forest map could not be constructed without observing the forest from many trees, deep and profound focusing of our senses and metaphorical leaps of our mind upon single details of our experiential worlds present initial steps towards comprehensive knowing of the larger wholes. And we have seen here how smallness and minute and patient observations may through metaphorical, systemic reasoning lead us from seemingly trivial and unimportant worldly beings and events to grasping the whole Cosmos in our hands.

It is only up to an observer's imagination to hinder or instigate as well as to find nice and inspiring or vulgar and depressing metaphors through applying such a systemic reasoning upon any contemplated experiential whole. While fostering analogical reasoning may invoke schizophrenic features of thinking and traits of other mental disorders, it is also the basis for emanation of fine sparkles of divine inspiration. Such a dichotomy should not be too worrying

when we recall that all human inventions, from religion to language to science and technology may always be used for thoroughly different and sometimes completely opposite means. Accepting logical rules as the basis of reasoning carries a similar dichotomy of imminent traps and useful guidelines. If applied as pragmatic means, with one's being aware of its relation to investigated experiential features as analogous to the relationship of a map to its territory, logic presents a viable reasoning methodology. However, when seen as inherent to the very fabric of the world, one can easily find oneself in the position of the devil from John Milton's poem 'Paradise Lost', lost in the labyrinth of one's own thoughts in attempts to logically explain the paradoxical foundation of natural and spiritual aspects of informational evolution. Also, if we consider that every sort of scientific and technological development and evolutionary step sprang into life on the basis of problem-solving attempts, it becomes clear that opportunities to advance forward are necessarily linked to problems and dangers, as well as that the other inherent side of every harmonious aspect of the world reverberates with potential dissonances and disruptions, and *vice versa*.

Scientific representations of natural processes and relationships similarly abound with enormous ethical and aesthetical potentials. Although the models of atomic, molecular or macroscopic physical interactions may provide us with surprising ethical norms, only one such example will be mentioned here, and that in the form of comparative description of artificial and natural production processes. Namely, synthetic methods in chemistry rely on using: a) relatively complex building blocks, simple media and simple processes; b) linear reactivity (one reaction at a time); c) quick attainment of final states (due to far-from-equilibrium conditions); d) dealing with molar quantities; e) tendencies towards a duplicating reproducibility. On the other side, natural (biomolecular) synthetic processes are typical of using: (a) relatively simple building blocks, complex environments and complex processes; b) parallel processing (hundreds of reactions at a time); c) relatively slow attainment of final states, d) dealing with sub-picomolar quantities; e) imperfect reproducibility (overcome by a high selectivity for products that meet the required specifications)^{57,58}. However, comparisons of artificial and natural processing pathways may be useful not only for the refinement of human production settings towards imitating natural elegance and efficiency in creation, but also for the improvement of our cognitive attitudes on the way towards reflecting the breadth of Nature in every thought and act of ours. From the presented comparison, we can thus conclude that such a way ought to comprise the following norms: a) the use of simple ideas in ever wider and all-comprising contexts; b) simultaneously creating and learning on miscellaneous acting aspects; c) not rushed and maximizing, but slow and optimizing, deliberate creation; d) finding virtue not in gigantism, massiveness and superficial strength, but in small events, processes, production settings and yields, as well as in wavy flexibility, durability and the economic norm that 'small is beautiful'⁵⁹; e) always novel adaptation of our creative products and acts to unrepeatable circumstances, and not valuing mechanistic reproduction of creative acts, but reaching 'perfections through imperfections'.

The same metaphorical nature of descriptive expressions may be regarded as valid for religious towers of knowledge as well. Therefore, instead of being regarded as the system of knowledge that reveals experimentally unverifiable truths, religion may be said to represent sets of metaphorical directives that point towards the pathway of learning the elementary ethics of living. The life of Christ and the Book of Revelation, for instance, may thus be seen not as truthful representations of supernatural phenomena, but as humble stories about spiritual journeys of individual human beings. Crucifixion and resurrection may be seen as metaphors of either the vanity of attempts to extinguish the boundless virtue of a loving heart and its good

deeds or of self-sacrifices and dissolution of egotistic personality traits as the natural steps towards reaching true happiness and, in a sense, fulfilling the story of our individual journeys in life. This story may as well end when we start appreciating the whole world as ourselves (and become, so to say, One with it), and reach the point of pure devotion to all life, described by the following Biblical words: ‘The Spirit and the bride say, Come; and let him that heareth say, Come; and let him that is athirst come; and whosoever will, let him take the water of life freely’ (Revelation 22:17); because only when we start living for others we become truly ourselves. Noah’s rainbow (Genesis 9:13) may be regarded as a metaphor of beautiful, clear and inspiring sky of human mind that follows the rainy moments of our dolorous and sobbing repentances over previous disgraces in our thinking, judging and acting, through which the ‘sins’ as disharmonies within our beings are being washed away. Also, the ‘Kingdom of God’ and the ‘other world’ may be, quite reasonably (Luke 17:21), regarded as the inner worlds of our imagination, feelings and love. The Biblical story of Genesis may be from a metaphorical point of view regarded not as a creationist story, but as an account of self-organizational instances in the evolution of life. Self-production of differences (i.e., information) via divisions of ontological wholes to complementary halves, such as light and darkness, day and night, Heaven and Earth, and water and land, may be concluded from the Biblical representation of the origins of life. Rather than a truthful account of supernatural events, the Biblical story of expulsion of Adam and Eve from Paradise can be understood as an allegory of human self-isolation from the roots of true happiness, which entailed collective renunciation of the senses of self-responsibility for the whole world as we have known it. Namely, when God enquired about the eaten fruits from the tree of knowledge, Adam did not protect Eve, but renounced his own responsibility by blaming her, whereas Eve did the same by condemning the serpent for her own decision³¹ (Genesis 2:11-13). The biblical tree of knowledge may, in fact, neatly represent the human capability of performing reflective mental operations, as equivalent to conscious observations of the very processes of observing. The moment when the ability to mentally reflect dawned upon humanity may be considered as equivalent to the evolutionary emergence of consciousness and self-awareness of life, whereas one may note that in parallel with a systemic ascension from the experiential level of primary perceptual observations to the second-order cognitive level of observing the primary observations, the potential for exhibiting ashamed, disgraceful and desperate states of mind (that the expulsion from Paradise symbolizes) has grown in the same extent as the wondrous capabilities of human minds could be exercised. ‘For in much wisdom is much grief, and he that increaseth knowledge increaseth sorrow’ (Ecclesiastes 1:18), Ecclesiastes wrote, whereas we should keep in mind that vigilance, cautiousness and prudence that the heedful attitude of self-consciousness and self-awareness brings forth gently cultivate the roots of wise, sensitive and rational beholding of the world.

However, it indeed seems that every natural or Biblical event may be metaphorically interpreted in an endless variety of ways, ranging from beautiful, highly ethical and inspiring to dark, destructive and pointless. Today’s popular representations of biological creatures and social and ecological events using neo-Darwinian, militant and manipulative metaphors may accordingly be challenged by the limitless set of inspiring imagery, including the representations of life in the form of holistic systems and harmonious, musical interactions of countless relations⁶⁰ that range from quantum vibrations of atomic interactions to mechanical and electrical oscillations to biological heartbeats, geological ocean tides, ecological population cycles, economic business cycles, and spinning and revolving Earth and celestial bodies. Great care should be paid to an inherent beauty and qualitative richness of the metaphors applied in the

course of systemic reasoning, edification of understanding and evolution of meaning in our cognitive spheres, especially as we may know that ‘people form metaphors that form people’. Friedrich Nietzsche’s Zarathustra at one point on his journey regarded the metaphor of a tree as the one showing us how every being is rooted in darkness and evil while its branches and blossoms ‘dwell close to the seat of the clouds’⁶¹. But again, particularly because of this intrinsic freedom to subjectively direct the metaphoric processes of interpretation and understanding, there is always a way out. Namely, Nietzsche’s interpretation of the metaphor of a tree may be understood as pointing out that dialectics embodied in the form of dialogical disagreements of cognitive perspectives and worldviews presents the basis for improvements at the level of individual and common understanding of experiential realities. ‘For if the firstfruit be holy, the lump is also holy; and if the root be holy, so are the branches’ (Romans 11:16), as was the part of Paul the Apostle’s sacred teaching. Thereupon, a more profound stance we could accept is the one according to which a human tree of knowledge mutually develops its sacred and invisible qualities and diversifies the organization of its stem and branches. From such a point of view, spiritual (invisible and foundational) and informational (visible and measurable) evolutions could be observed as taking place in parallel, mutually supporting each other, similar to the parallel lines of a railway track or a pair of flapping wings of a bird that through complementary action support a starry train ride and a heavenly bird flight, respectively.

Consequences of acknowledging the metaphoric nature of scientific concepts and the importance of systemic reasoning

‘The oversimplified ideas will always displace the sophisticated and the vulgar and hateful will always displace the beautiful. And yet the beautiful persists’

Gregory Bateson, *Mind and Nature*

Science could not be regarded anymore as a positivistic pathway to objective, observer-independent and truthful representations of a universal reality. From the co-creational perspective, scientific knowledge may be considered as a network of relationships that metaphorically reflect details and aspects of epistemological and ontological order of the natural/experiential phenomena (although irreducible to experiential patterns that would belong to mind and Nature alone, due to their inextricable intertwinement in the emanation of all experiential qualities), and consequently point partly to the organization of hidden ontological order of the experiential reality and partly to the epistemological heart of the explorer. As a result, scientific knowledge as only one out of infinite possible sets of interwoven metaphors that may be favorably applied to depict experiential patterns may be more precisely defined as an inter-subjective set of human concepts as pragmatic metaphorical directives - highly dependent on biological structures (and consequently the actual evolutionary stage) of the correlating observers - applied in mutual coordination of human experiences. More than interesting, an identical definition could be applied to describe all religious, philosophical, ethical, artistic and many other explanatory models commonly utilized within the human societies. Innumerable actual and potential conflicts between scientific and religious worldviews might be elegantly resolved at the very foundations with such a ‘tolerant’ shift from reliance on explanatory models employed with assuming the possession of exclusive privileges to describe universal (i.e., single existing) truths to their application in form of pragmatic and convenient metaphors for describing only one or a few out of endless possible aspects of manifestation of co-creational interactions

between impalpable epistemological foundations of a being and imperceptible patterns of 'hidden' ontological reality.

The word 'science' can be reduced to its Indo-European root *skei*, which means 'to divide, to discern, to make a difference'⁶², whereby the word 'religion' comes from Latin *religare*, which means 'to connect'⁶³. Consideration of the original linguistic roots of the words that denote science and religion may lead one to conclude that whereas the essential features of scientific approach are inherently related to production of ever finer and subtler distinctions at the experiential fields wherein uniformities and singularities previously resided, the essence of religious approach lies in an intrinsic cognitive quest for the subtle threads that will connect and unify diverse experiential patterns, instances, events, beings and phenomenological intentions that constitute the planetary network of life. The co-creational conception of cognitive phenomena may be considered as inherent both to the former, scientific approach due to its depiction of epistemological foundations of cognitive phenomena and of any subsequent investigation of experiential/natural events, and to the latter, religious approach due to an inherent proposition of 'religious' co-creational relationships that connect the deepest epistemological patterns of a being and the 'hidden' ontological features of reality in each detail of the being's experiential world. Interdependent application of scientific and religious methodologies for comprehension of experiential phenomena might be, thereupon, reflected in a mutual instigation of fruitful 'scientific' branching of the human tree of knowledge on its visible and apparent side, and stimulation of passionate and inspirational 'religious' quests for meaningful unities of the diversity of worldviews, scientific disciplines and experiential patterns at the foundations of their existence and the rising pillars of spiritual values from the explorers' hearts.

Acknowledging the same, pragmatic and metaphorical roots of all human endeavors, from scientific schemes and technological blueprints to artistic concepts and religious scriptures, may naturally expand the potential for their flourishing interlacement. The old Slavic word *nauk* that is nowadays regularly applied among Slavic-speakers to denote science may be simultaneously used to describe any sort of skill⁶⁴, from scientific mastery to orange juggling to playing a piano, whereas the Slavic words that denote faith and probability comprise the same root (*vera*), which indicates that uncertainties, unpredictabilities and logically non-resolvable intricacies in the domain of human knowledge provide a fertile ground for the growth of devotional and 'faithful' cognitive attitudes. Minor linguistic shifts in perspectives may accordingly erase the presupposed immanence of conflicts between scientific and religious attitudes, and illuminate the shared existential roots of all communicational endeavors of humanity. Innumerable examples of fruitful interdependent application of scientific and artistic concepts and guidelines in problem-solving approaches may also be supplied. Metallurgy as a professional field antecedent to materials science and engineering, one of the most diverse and multi-disciplinary contemporary areas of science, was first developed as a form of art, only later to be transformed into scientific and technological field with practical significance⁶⁵. The achievements of modern music and other contemporary artistic forms related thereto present nice examples of a successful intrinsic incorporation of scientific discoveries (in form of technological products) in the manner, mode and style of contemporary musical expressions. The theoretical framework of quantum chemistry becomes 'incorporated' in computer hardware and implicitly present in modern-day word processors that significantly facilitate the art of writing and thus leave significant traces on the patterns of human communication, evolution of their understanding and the nature of spiritual experiences as well. On the other hand, learning from

the artistic concepts of beauty and symmetry may also significantly improve the conceptual arrangement of scientific presentations, impart useful incentives and clarify the contextual character and large-scale meaning of scientific inquiry. Miscellaneous other ‘glass bead’ games⁶⁶ may result from acknowledging the same, pragmatic and metaphoric basis of science and religion and arts, and creatively balancing scientific rigor with artistic inspiration⁶⁷.

When we understand the layered nature of systemic reasoning, it would become clear why the works of Nature and artistic masterpieces may reflect their explicit meanings at many different levels of their organization and widely diverse perspectives of their apprehension. Consequently, writing about harmony between scientific rigor and artistic sensibility without reflecting such a balance in the construction of each sentence, paragraph and structural and conceptual course of the whole work (i.e., the thread that links beginning to an end), presents an incomplete task. The approval of the key role that imaginative metaphors play in the formation of scientific knowledge could lead to incorporation of the lessons on art within the basic scientific education. Understanding the strength of narratives and experiential metaphors from pieces of arts and natural events may invoke interesting novel abductions at the level of scientific reasoning. Therefore, instead of the mechanistic education, learning through analogies, stories and metaphorical hints may present a natural basic form of studying any science or art; especially because every form of knowledge is shaped from within, i.e., has to be actively constructed through personal aspirations and marvelous inquiry. In that sense, the best way to teach the skills of analogous reasoning is through very analogies, i.e., not literally explaining metaphorical meanings of given relationships, but providing merely analogous hints for the students’ independent arrivals to their own discoveries.

Numerous consequences of the parallel acknowledgement of the co-creational nature of experiences – according to which ‘subjective’ and ‘objective’ features of investigated systems are in all cases inexplicably intertwined – and the metaphorical character of all knowledge could be outlined in reference to their relevance for various domains of social communication.

Instead of one’s rigid reliance upon fixed descriptions of certain organizational aspects of the experiential world and their autocratic propagation with referring to their ‘true’ character, genuine curiosity and trustful adoption of numerous worldviews can be stimulated from the cognitive attitude that recognizes an omnipresence of metaphors in all domains of human experience and communication⁶⁸. Charles West Churchman, in that sense, proposed the following lines of thought: ‘What is in the nature of systems is a continuing perception and deception, a continuing reviewing of the world, of the whole system, and of its components. The essence of the systems approach, therefore, is confusion as well as enlightenment. The two are inseparable aspects of human living. Finally, then, here are some principles of a perception-deception approach to systems: 1. The systems approach begins when first you see the world through the eyes of another... 2. The systems approach goes on to discovering that every world view is terribly restricted... 3. There are no experts in the systems approach... 4. The systems approach is not a bad idea’⁶⁹. Fundamental acceptance of other experiential worlds as equally real and significant as one’s own experience provides a glimpse into one of the crucial aspects of the Christian love, and opens the way towards transcendence of the alienating egotistic drives of the modern society. Misleading passionate engagement in fights ‘for...’ and fights ‘against...’ could correspondingly be transformed into an attitude of simultaneous embracement and unification of versatile perspectives into meaningful wholes and instigation of their diversification into a fruitful and vivid multitude of beings, opinions and worldviews. The proposed ideal of ‘non-identification’ of the ‘maps’ of reflective descriptions with the

‘territories’ of the actual experiences mapped, in that sense, implies not a programmatic manipulation of conceptual models of experience, permeated with an unethical disengagement of the inner sense of responsibility for their development, but exactly the opposite: accepting responsibility with respect to the evolution of co-created experiential features and interpretational patterns of various ‘maps’ encountered in the course of one’s participation in the social coordination of experiences. Such an attitude may comprise the way towards an attainment of a seemingly paradoxical balance between the Buddhist ideal of nonattachment, spiritual freedom and thoughtless purity of the meditative mind on one side, and the Christian sense of responsible unity with all of one’s patterns of thought, surrounding beings and experiential details on the other.

In order to overcome the current trend of hostilities between science and religions and arts, wherein ‘scientific (and all other acontextual and objectivistic) descriptions by using ‘true’ bricks build big lies, whereas arts and religions by using ‘white lies’ build big truths’⁷⁰, the metaphorical nature of both scientific and religious representations of the world needs to be acknowledged. The genuine meaning of the Biblical ‘truth’ as not provable and totalitarian concept, but as a ‘relationship pervaded with trust and reliance’⁷¹ could be discerned from such a metaphorical viewpoint, as well as the ethical significance of William Blake’s words that ‘a truth that’s told with bad intent, beats all the lies you can invent’⁵⁶, and Emerson’s idea that ‘the true philosopher and the true poet are one, and a beauty, which is truth, and a truth which is beauty, is the aim of both’⁷². As a matter of fact, because induction-derived, generalized knowledge could not be seen anymore as of a perfect and subjectively unconditional validity, every form of knowledge could be regarded as an emanation of faith, i.e., of our beliefs. ‘The things that I know, I believe in’⁷³, were the words of Ludwig Wittgenstein, whereas William James said that ‘true is the name of whatever proves itself to be good in the way of belief’⁷⁴. The word ‘fact’ could, therefore, reclaim its original meaning derived from Latin *factum*, which means ‘something made’, and thus implicitly points to a certain creator of every ‘fact’¹⁷. Transformations of believing attitudes to certain ones imply an unnatural, robotic idea of technical prohibition of mistakes, even though we know that mistakes present unavoidable steps on the road of learning and evolution of every biological organization. Innumerable metaphors of natural/experiential order, including Gödel’s incompleteness theorem, Heisenberg’s uncertainty principle, and thermodynamic and archeological patterns of natural evolution, indicate that every natural, wise and inspiring idealization ought to be based on an implicit acceptance of natural uncertainties. The key to fruition of beauty in our thoughts, movements and worldviews is in accepting natural uncertainties and encounters with spiraling harmonies between periodical recurrences and surprising novelties.

As a matter of fact, one of the most important challenges of the modern era is learning how to be certain in uncertainties, to have faith in unverifiable knowledge and subjective ‘guiding stars’ in its evolution, to learn to present ideas always in a new manner and in new forms, as well as to stimulate compromises between logical constraints and metaphorical freedom in human patterns of reasoning, and accordingly create prosperous bases for the development of social cognitive networks. Nevertheless, whereas the objectivistic science can be considered as homeorhetic⁷⁵ (i.e., a process of analytical selection and synthetic recombination guided by a predetermined set of systemic norms) and thus hardly susceptible to reevaluations of premises of reasoning, systemic, metaphoric thinking patterns may be, similar to the morphogenetic and evolutionary development, regarded as flexible in relation to modifications at

the ‘bottom’ level of fundamental systemic norms and ideals, and correspondingly open to emanation of diverse cognitive perspectives ‘above’ and their spiritual harmonies.

The general framework of the actual plans for scientific research and development implicitly presumes that scientific progress may proceed in accordance with a predetermined program, irrespective of whether ethical and aesthetical criteria are taken into account or not. The world of science, in other words, paradoxically becomes an outcome of ‘the process of imagining a universe entirely free of our imagining’⁷⁶. In spite of the socially prevalent objectivistic attitudes, however, science may be more properly depicted as an imaginative and diligent ‘forging’ and exchange of metaphorical directives in benevolent and spiritually edifying human-to-human relationships. Because ‘we as scientists explain our experience with our experience’, as Humberto Maturana noticed, scientific practice may be, similarly to any other communicational endeavor, defined as ‘coordination of our behavior during our co-existence with other beings’⁷⁷. Corresponding to the co-creational nature of linguistic comprehension of meanings, any science can be similarly considered not as a denotative, but as a connotative system of cooperative consensual interaction between human beings⁷⁸. After the long historical era dominated by objectivistic notions and attitudes that have given rise to an all-pervasive presence of autocratic opinions and conflicts of exclusionary ideas, battling over the ‘privileged positions at the sole territory of truth’, scientific explanations and everyday assertions could now rise up under the sky of the restored ‘age of reason’ as novel coordinative pathways of a metaphoric meaning and pragmatic character. Scientific or any other type of communication may become openly acknowledged as ‘coordination of coordination of actions’⁷⁷, and analogous to dance choreography, bringing science back to the landscapes of its primary origins: to benevolent creative thoughts, sparkling ideas, lucid inventions, and the very heart of human observers as the genuine compass of their true, spiritual orientations in social encounters. The relevant ‘ticking’ of the true essence of science is thus, similar to the meaning of any language expression, partly restored from the sole scripts and inertly drawn lines and messages to creatively wiggling cognitive cores of human beings.

Scientific practice perceived from this perspective may graciously bridge the long-lasting, traditional social gap between philosophers and workers. Every form of scientific knowledge, namely, does not represent a passive and solely *l’art pour l’art* scheme of abstractions, but a set of creative patterns intended for mutual coordination of behavior and experiential features at social level. This pragmatic aspect of both scientific practice and ordinary philosophical contemplations endows each type of human knowledge with an inherently active participatory character in relation to the pragmatic social flow of co-creative shaping of harmonious patterns of experiential worlds.

Scientific ideas, therefore, need to be developed and employed in continuous reference to a wide context of the sustainable evolution of social, ecosystemic and biotechnological patterns of communication, which may in future become openly related to diversification and enrichment of ethico-aesthetical and spiritual aspects of human consciousness. Since experiential compatibilities at the social level present the conditional basis for derivation of all scientific explanations, science can be regarded as an empirical methodological aspect of a much broader self-organizational network of social interactions, inherently guided by implicit intentions of participants towards benevolent and efficient co-orientation of each other’s experiential worlds. Humberto Maturana thus observed how ‘science is not a manner of revealing an independent reality; it is a manner of bringing forth particular one bound to the conditions that constitute the observer as a human being’⁷⁹. Each behavioral pattern and imaginary outline of a single

cognitive reflection can be correspondingly regarded as small metaphors that subtly shape features of innumerable experiential worlds around us, whereas being aware of the metaphoric nature of descriptions applied in both complex scientific and ordinary cognitive representations of experiential/natural phenomena could be regarded as a way to overcome the current problems related to a reigning disproportion between specialist professional attitudes and the abilities to generalize and conceptualize invisible links that figure among seemingly distanced scientific areas and disciplines on one side and individual cognitive worldviews on another.

With the reversal of 'truthful' to 'viable' character attributed to descriptions of the world, science might be accepted as a pragmatic tool applied for mutual co-orientation of experiences on the evolutionary path of planetary consciousness, and a true 'pattern that connects' individual beings in their aspirations to glorify and praise each other. The notion of 'verification', related to the establishment of the criterion of truthfulness in attempts to match theoretical predictions with corresponding experiential outcomes, could be accordingly substituted with the notion of 'validation', which implies an open acknowledgement of scientific practice as related to: not the constitution of eternal evidence, but of convenient agreements; not confirmation, but conformation of scientific arguments; and evaluation of not the potential to achieve a true and universal knowledge of natural order, but of social, spiritual and evolutionary prosperity of the investigated methodologies of scientific inquiry⁸⁰. All scientific descriptions, which are according to their experiential nature referring to interactions between inquiring minds and divine Nature, could be correspondingly accepted as consensual propositions. 'Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world. In our endeavor to understand reality we are somewhat like a man trying to understand the mechanism of a closed watch. He sees the face and the moving hands, even hears it ticking, but he has no way of opening the case. If he is ingenious he may form some picture of the mechanism which could be responsible for all the things he observes, but he may never be quite sure his picture is the only one which could explain his observations. He will never be able to compare his picture with the real mechanism and he cannot even imagine the possibility of the meaning of such a comparison', Albert Einstein declared, formulating *en passant* one of the principles of pragmatic science: 'The object of all science, whether natural science or psychology, is to coordinate our experiences and to bring them into a logical system'⁸¹. Thomas Kuhn accordingly claimed that 'rivalry between paradigms is not a type of battle that could be resolved by evidences...in the choice of a paradigm there is no standard higher than approval by the relevant community'³⁵, wherefrom it may become obvious that in order to find permanent and yet flexible grounds for peaceful and harmonious path of progress, one would need to switch from casual references to truthful comparisons of reflective abstractions with the 'real' and objective world to cultivation of the sense of continual reevaluations and revisions of implicit aspirations at the level of the deepest epistemological premises, because trust, faith and mutual devotion, instead of the non-empathic objectivity and neutrality, provide fertile grounds for a fruitful scientific inquiry. The whole wide world could not be observed anymore as the system of mechanical objects governed by fixed, inert and observer-independent mathematical laws, but through the lens of the co-creational source of every experiential detail and the corresponding metaphorical nature of science languages, it could be realized as spiritually materialized world of a subjective communion.

Scientific descriptions of the world may be, therefore, accepted not as the only possible and universal explanatory schemes, but as only one from an infinite spectrum of pragmatic ways to coordinate human actions in the world. Galileo Galilei believed that the Earth was moving and

that the Sun was still; Inquisitional premises were opposite – that the Sun was moving and the Earth was still, whereas Newtonian astronomers came to the conclusion that both the Earth and the Sun were moving. However, from the relativistic framework, all of the three astronomical worldviews may be shown as equally ‘true’, and that through invoking the simple relativistic adjustment of meaning for the notions of ‘rest’ and ‘motion’⁸². Many similar universalistic disputes could be exquisitely resolved through revisions of implicit assumptions of the confronted worldviews. Just as Immanuel Kant’s philosophy of transcendental idealism united the philosophies of rationalism and empiricism, Christiaan Huygens’ wave theory of light and Isaac Newton’s particle theory of light were merged within the quantum theory concept of wave-particle duality of physical entities, and topological geometry united the concepts of Euclidean, metric geometry and analytical, projective geometry, a deduction of wider, richer and deeper (referring to implicit contents) perspectives of viewing the co-creational relationships between mind and Nature presents the way towards unification of complementary worldviews of science and religion, as much as of the ‘chained’ logical and ‘leaping’ metaphorical aspects of creative reasoning. ‘Hundreds of doctrines head forward, instead of looking back, thus condemned never to unite’, Chuang-tzu said, whereby the Little Prince proposed that ‘by going only forward, one does not travel far’⁸³, and yet we know that ‘Nature draws straight with crooked lines’⁸⁴, as Paul Tillich observed. Open-minded retrospections and deliberate revisions of the foundations of our reasoning, therefore, present a safe route to transcend the programmatic, ‘blind’ evolution of understanding (regarded as the most significant invention of the 19th century – invention of the method of invention⁸², which consequently led to a continual advancement at the level of professionalism with ignoring the role of systemic, common-sense wisdom and aesthetics of reasoning) and arrive at the fields of cooperative co-creativity and spontaneous acknowledgement of the key role that implicit spiritual aspirations play in the development of any science or craft.

In that way, science cannot be regarded anymore as a tool for probing the ‘true’ character of Nature. Attachment of the metaphorical criterion of ‘viability’ to scientific descriptions and linguistic assertions implies that instead of being ‘masters’ over human patterns of reasoning and creative options, science and language may become faithful ‘servants’ on the road to fulfillment of benevolent human aspirations related to enrichment and beautification of the surrounding experiential worlds through their utilization. Similar to many other products of human work and inventive creativity, science is originally predisposed to be a pragmatic servant of human intentions, although it may be easily transformed into a ‘blind’ leader thereof whenever scientific representations of epistemology-mirroring and implicitly co-orientational character become mistakenly identified as reflections of intrinsic qualities of objective and universal Nature. The metaphoric nature of human descriptions of experiential order endows every form of knowledge with an attribute of not *as-is*, but *as-if* character, so that scientific ideas could be correspondingly regarded not as true reflections of an ontological reality, but as sets of analogies applied for depiction of epistemological relationships that comprise human experiential worlds. Such a dichotomy in large extent resembles the ancient polarity⁸⁵ between Heraclitus’ advocating pragmatic, contextual and relational, ‘the way the world works’ understanding, and Parmenides’ and subsequently Aristotelian reductionist ideal of ‘the way the world is’ comprehension of experiential reality. From one such humble and pragmatic *as-if* vision of the world, any formal specification of experiential phenomena can be comprehended not in terms of an inherent elimination of all that is neglected and missing in the constructed descriptions (as is the case with misconstrued *as-is* descriptions of the world), but in terms of an arbitrary application of

convenient approximations that carve pragmatic pointers with benevolent communicational purposes. Scientific universum, therefore, instead of being a universal reference frame that conditions the existence of scientific assertions and comprises implicit requirements towards compliance (thus the analogy of a ‘bad’ master) to objective knowledge in order to reach any level of co-existence and avoid conflicts of opinion, becomes a ‘multiversum’ filled with ideas of existence of as many different domains of truth as the number of ways to outline the traits of experience is. Phenomenological reductionism, implicit in the idea of an objective world – universum, becomes correspondingly avoided. In the multiversal world, consensuses are reached not by referring to possession of the access to a privileged panorama of the objective, observer-independent natural order, but by finding all-encompassing patterns of mutual acceptance and understanding. Rigid objectivistic frameworks and norms that require unconditional submission thereto, as well as the corresponding patterns of fundamentalism, totalitarianism, intellectual imperialism, irresponsibility, and the tendencies to exclude, dominate and control inferred thereupon, may be transformed into flexible co-operational spheres and co-creative correlations of ideas, implicit assumptions and points of view. Together with such a decentralizing, ‘Copernican’ transition, the functional irresponsibility and inertness grows into a self-responsible, prudent and holistic awareness, whereas the objective knowledge cedes its place to ‘sharing’ knowledge of metaphorical character⁷⁹. In accordance with the co-creational character of our experiences, search for the dynamic, versatile and non-permanent balances between subjective and objective features within every form of knowledge opens the door for an endless evolution of scientific thought.

As we approach the final lines of this chapter, we may recollect the path of Immanuel Kant’s late philosophical journey through the regions of practical and pure reason: ‘Reason, in its speculative employment, conducted us through the field of experience, and since it could not find complete satisfaction there, from thence to speculative ideas, which, however, in the end brought us back to experience. In so doing the ideas fulfilled their purpose’⁵⁵. Such a path is reminiscent of an ancient Oriental story in which a Zen master explains the process of his inner spiritual pilgrimage: ‘In the beginning, the rivers had been rivers and the mountains had been mountains; when I began studying Zen, the rivers ceased to be rivers and the mountains ceased to be mountains; but now, when I have mastered Zen, the rivers are rivers and the mountains are mountains again’. The path of spiritual ascension of Wolfgang Goethe’s Doctor Faust in similar manner attains fulfillment not through self-satisfying conceptualizations and idealization of perfectly complete and consistent models of natural order, but through devoted, wholehearted and unconditional serving other beings⁸⁶. When asked to explain how he had reached the treasures of his wisdom, a Sufi master, al-Bistami, replied: ‘Leave the door open, my mother said once, and I spent the whole night paying attention to the accomplishment of her wishes. This is how the things that I sought for miraculously entered through that door’⁸⁷. These and similar beautiful narratives may provide us with precious ‘compasses’ of knowledge, which every now and then redirect us back to the genuine beginnings of our scientific journeys, reflected in the deepest epistemological settings of experiential co-creation. All of our successful and truly creative endeavors may be consequently recognized as being inherently guided by the patterns of love and care for the beings of the world set at the very epistemological foundations of co-creation of our primary experiences, cognitive reflections and actions. All apparent and visible aspects of contemporary communicational networks may be correspondingly regarded as superimposed on and truly driven by the graceful ‘compass’ of care and attention for other

beings, residing at the very core of our hearts. In proposing so, we have finally arrived to the major conclusion of this chapter:

‘Love and care are the foundation of all knowledge’

Science, therefore, has the roots that reach deeply down to the domain of love and care among human beings, which clearly opens the door for the natural compatibility of religious and scientific studies, as comprehended from the metaphorical points of view. The whole fundamental background of reasons for the conflict between science and religion has thus vanished. We are left with the metaphorical tree of our contemplation, imagining how studies of religious metaphors deepen the invisible ethical roots of the scientific stem and branches of knowledge, whereas our practical devotion to scientific and technological endeavors strengthens and invigorates the potential for ever more intensive and richer drawing of saps and waters of enlightening religious experiences.

Conclusion

‘The stars are beautiful because of a flower
that cannot be seen’

The Little Prince

Getting back to the place where we started from, we may recall once again that logical reasoning on the basis of presupposed and unchanging rules presents an inconvenient method for revision of these elementary criteria of selection and their reevaluation in terms of more prosperous ones⁸⁸. Learning to search for the reflections of invisible epistemological foundations upon which all the results of our perceptions and reflections implacably stand, and flexibly revise them through metaphorical thinking and holistic inspiration presents a spiritually rewarding task. The Little Prince once noticed that ‘the stars are beautiful because of a flower that cannot be seen’⁸³, pointing us to the all-encompassing importance of invisible roots of the co-creation of every item of the world of our experience. The hypothesized co-creational organization of the worlds of our experience, which corresponds to accepting every experiential detail as arising out of an invisible dialogue between the deepest epistemological foundations of our beings and the divine teaching force of God, invigorates wise aspirations to mutually improve the invisible spiritual roots of our beings and the obvious order within the tree of human knowledge and its worldly applications.

The beauty of science lies in perceiving and revealing miscellaneous metaphorical signs with both spiritual and pragmatic meanings as incorporated in the very fabric of the Universe. The steps of our spiritual evolution are marked with reading such subtle signs on the way towards realization that every aspect of our experience presents a metaphor of our epistemological foundations in form of the deepest intentions and aspirations through which we approach phenomena of experience. And in that evolution, we may eventually become as deep in our co-creational encounters with God as the whole nature, reflecting the inner peace of deep blue sea, endless inspiration of drawing milky sky, blushful grace of motley rainbow or silent, but wondering inquiry of sparkling stars in every instance of our radiant co-creative existence. And on the way there, let us be reminded that in order to avoid being superficially literate hypocrites that merge maps with their territories, and start reading ‘the signs of the times’, we should appreciate the strength of metaphors and their pervasion everywhere, throughout the

domains of art, science, philosophy and religion, and as such engage them at the very foundations of our education.

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On the Light Doves and Learning on Mistakes

Abstract

Each type of learning is proposed as being a three-stage process composed of: I) recognition of a perceptual situation and performance of an action corresponding thereto; II) observation of a deviation of the action result from an expected outcome; III) rearrangement of the conceptual framework of reasoning to meaningfully assimilate the observed deviation. In order to evaluate a general, systemic significance of the concept of learning proposed hereby, the latter is assessed from perspectives that correspond to diverse levels of organizational complexity of Nature. Thermodynamic concepts, constructivist and autopoietic frameworks of analysis of cognitive phenomena, and social science aspects are intertwined so as to support the all-encompassing meaning of the general pathways of learning proposed herein. Numerous ethical consequences, with a particular emphasis on educational approaches, are derived from accepting such a general nature of learning and development. The naturally implied dialectical form of evolution, according to which prosperous and favorable features of human creativity arise solely from problem-solving situations, is further discussed.

1. Introduction

‘The light dove, cleaving the air in her free flight, and feeling its resistance, might imagine that its flight would be still easier in empty space. It was thus that Plato left the world of the senses, as setting too narrow limits to the understanding, and ventured out beyond it on the wings of the ideas, in the empty space of the pure understanding. He did not observe that with all his efforts he made no advance - meeting no resistance that might, as it were, serve as a support upon which he could take a stand, to which he could apply his powers, and so set his understanding in motion. It is, indeed, the common fate of human reason to complete its speculative structures as speedily as may be, and only afterwards to enquire whether the foundations are reliable’

Immanuel Kant, *Critique of Pure Reason*

The core idea of this chapter, presented in Section 2, is that every form of learning is learning on mistakes. Thermodynamic, constructivist and evolutionary perspectives are intertwined within a systemic approach so as to support this thesis. A three-stage concept describing the learning processes in general is subsequently provided. In attempts to observe an all-encompassing meaning of the proposed thesis, it is assessed from the viewpoints that correspond to diverse levels of organizational complexity of Nature. The majority of the ideas that comprise this chapter rest upon the conceptual foundation of constructivist, autopoietic and second-order cybernetic frameworks for the analysis of biological phenomena. From these perspectives, the whole world as one knows it presents the world of one’s experience. Consequently, it cannot be regarded as an objective, observer-independent set of initial causes for the subject’s passive perceptual detection of environmental impulses and a perfectly

corresponding projection thereof in terms of thoughtful reflections. Instead, it is the end-result of an autonomous, active and semi-subjective perceptual and reflective construction of a unique experiential world. Environmental stimuli, accordingly, do not initiate purely detective responses within inert cognitive structures, but only modify operationally closed, autonomous self-production activities of the given cognitive systems. However, since active cognitive systems do not create features of the world out of a uniform sea of raw impulses, biological creatures can be considered not as sole creators, but as co-creators of their experiential worlds, as will be discussed in more detail in Section 3. The ideas that every form of experience derives from perceptual mistakes and co-creational constraints and that experiential patterns arise from the evolutionary learning flow of human minds are expounded in Section 4. Section 5 deals with the idea that common languages came to a rise and developed via overcoming implicit misunderstandings during the mutual coordination of experiences at the social level. Section 6 describes some of the ethical and aesthetic consequences of accepting uncertainties and mistakes as inherent in all fruitful expressions and pathways of reasoning. Instead of regarding living beings as robotized and passive detectors of information, which could be thereby manipulated by conditional teaching attitudes and mechanistically ‘instilled’ with knowledge, the studying approach from the perspective presented herein requires thoroughly changed features. The key properties of such an ‘ultimate’ education are presented in Section 7. Cosmological reflections of the idea that mistakes and deviations from our expectations are implicit in every pathway that leads to novelties, improvements and enrichments of knowledge, experience and behavior, are discussed in Section 8.

2. Three stages of learning

‘A warrior of light knows that certain moments repeat themselves. He often finds himself faced by the same problems and situations, and seeing these difficult situations return, he grows depressed, thinking that he is incapable of making any progress in life. ‘I’ve been through all this before,’ he says to his heart. ‘Yes, you have been through all this before,’ replies his heart. ‘But you have never been beyond it.’ Then the warrior realizes that these repeated experiences have but one aim: to teach him what he does not want to learn’

Paulo Coelho, *Warrior of the Light*

‘Thou canst see no fault in the Almighty One’s creation; then look again. Canst thou see any rifts? Then look again and yet again. Thy sight will return unto thee astonished and dazzled’

Qur’an 67:3-4

Neo-Darwinian explanations of the evolution of life and nowadays classical, Freud’s psychological approach to explaining the evolution of mental processes are both based on the idea that the adaptation of beings to the limiting conditions imposed by their environments and the subsequent releases of any intrinsic tensions present the drives of the evolutionary progress and the attainment of psychological balance and satisfaction, respectively. However, on the basis of such an idea neither the evolutionary emergence of any life form more complex than blue-green algae (because these cyanobacteria are known as unsurpassable in their reproductive capacities and adaptational abilities¹) nor the formation of any idea in human mental spheres² could have been explained. Playful drives, research activities, wondering aspirations and inherent

creativities that mark the most valuable cultural deeds are some of the human traits that could not be explained by the adaptation models and behavioral equilibrium. On the other side, it is known that psychological and sensory-motoric acts stimulated by a pure relaxation of tensions may lead to serious mental disorders, as has been demonstrated in numerous sensory deprivation experiments³.

Each process of learning implies an input of the metabolic energy required to surpass thermodynamic energy barriers posed on the way to the states of novel homeostatic equilibriums and enriched informational contents of the system. Stress can be, therefore, regarded as an ambivalent phenomenon. On one hand, release of stress may lead to elimination of its damaging effects and an increased sustainability of the system in case when its accumulation would lead to a breakdown of the organizational unity. But on the other hand, only through its constructive assimilation can a system reach informationally richer cognitive and/or physical states.

The transitions of living systems into states of a more complex, negentropically richer inherent organization and of a more sensitive feedback communication with the environment require their passing through the bifurcation states of instability, frequently manifested as the moments of crisis, confusion and anxiety. For example, each SWOT (Strengths-Weaknesses-Opportunities-Threats) strategic planning analysis presents opportunities and threats as merged into a single set of relationships, whereby the Chinese ideogram that denotes 'crisis' is drawn as a combination of two symbols that separately stand for 'danger' and 'opportunity'⁴. 'Where the danger is, the saving power grows too'⁵, Friedrich Hölderlin observed, conversely emphasizing that an awareness of certain disharmonies and mismatches presents a necessary precondition for attaining the states of enriched inherent diversity. Each cognitive sparkle that indicates that the actual experiential flow is not proceeding according to our anticipations, therefore, presents a reflection of the archetypical moments of standing and facing 'crossroads' on the road of our development. As symbolically present at the very roots of the Christian imagery (e.g., ascension of the Christ upon his crucifixion), these crossroads neatly reflect the idea that arrivals to the destinations abundant with cognitive and evolutionary treasures inevitably require surmounts of numerous temporary uncertainties and instabilities.

Each type of learning is herein suggested as a three-stage process, as shown in Figure 1. During the first stage, the subject recognizes a certain situation as recurrent in relation to its past experiences and performs specific activities associated with it. The first and the second stage are linked by the subject's expectation that the performed actions will produce desired, preconceived and in certain extent already experienced results. The second stage presents a collection of the action outcomes, which may be in accordance with the subject's expectations or may deviate from them. If the result is expected, then there is no basis for learning and the attention of the cognitive system usually linearly shifts to another situation in the experiential domain. However, if the expected result differs from the experienced one, perturbations in terms of disappointment or surprise occur, corresponding to the aforementioned bifurcation states from which the doors to learning and advancement open. Habitual return to the first phase and repetition of the given action and outcome monitoring often take place to ensure that the detected deviation has truly occurred. Parts of experience that were previously observed as indivisible wholes become 'disassembled' and compared in the third stage of the learning process, so that new aspects of reality become created in this search for consistent matching of the newly expected and the observed outcomes of specific actions. These new features of the observed reality may introduce new recognition patterns and cognitive conditions according to which new actions will be

initiated. In other words, something has been learned, whereby it is exactly this change at either sensory-motoric or conceptual domains that comprises the essence of the learning process³.



Figure 1. The three-stage scheme describing every form of learning.

Such a generalized representation of the process of learning can be illustrated by an observation of a child engaged in reading. The first stage corresponds to the child passing over certain statements with a sense of recognition and familiarity. The second phase corresponds to the moment when something irrational and seemingly misunderstood becomes faced. The child habitually returns to reading the same sentences again to make sure that it did not skip something essential. Then, after a few repetitions, the moments of confusion, worry and cognitive instabilities occur, and they can be either overcome almost instantaneously or after hours of pondering or may even present obstacles that will never be surpassed. However, those are truly invaluable, enlightening moments when after many attempts to rearrange either obvious links in one's thinking or deep and directly invisible foundational propositions of one's reasoning, one finally finds a perfectly matching answer and touches the end of the third phase of learning that leads to novel and enriched levels of knowledge and further learning.

Every process of learning, from perceptual enrichments to scientific advances to the ethical development, may be described by the same three-stage learning scheme. As John Dewey stressed out, the very 'reflections arise because of the appearance of incompatible factors within the empirical situation'⁶. Scientific investigations, a.k.a. 're-search', imply repetitive observations of experiential phenomena, where each observed relationship arises as the product of a comparison of double descriptions⁷. Observation and comparison of at least two distinctive description perspectives (as analogous to a pair of eyes) that at first sight reveal their ostensible incompatibility presents indeed the beginning of science and contemplative reasoning. Ethical and spiritual values also become revised and reevaluated only after disappointments in them are initiated. It may become clarified, thereupon, why the cognitive development of a given tradition of reasoning could be represented not by perfectly harmonious and delightful social gatherings pervaded with cognitive attitudes that never look back and revise fundamental qualities of reasoning and behaving, but by 'lone sea stars' that temporarily leave the cheerful clique of their surrounding and quietly betake themselves to a quest for the fundamental epistemological and ontological questions of being and becoming. Instead of tending to express all the tensions that might otherwise serve as carriers to enriched organizational states, fertile cognitive grounds for learning and evolution of understanding are reflected in the abilities to faithfully 'keep the secret'. Hence, through keeping and constructively self-integrating brilliant emotions, products of imagination, inherent values and preconceived expressions, steps to novel, more complex and sensitive levels of learning are made. Maybe such an inverse correlation between the emotional and reflective transparency and the abstract creativity⁸ presents one of the psychosomatic factors (in addition to biological and social ones) that explains why the human male/female dichotomy has been throughout the history of human race reflected in a similar dichotomy of major artistic and scientific achievements. Nevertheless, 'to be an error and to be cast out is part of God's

design', as William Blake poetized, pointing to those quiet beings that through an exceptional sensitivity towards learning on subtle mistakes succeed in enlightening the foundations of their perception, reasoning and acting, and naturally provide the templates of advanced reasoning patterns to the rest of humanity, as the hidden keys to the evolution of life. 'The stone which the builders refused is become the head stone of the corner' (Psalm 118:22), is the Biblical verse that may remind us that beings and events that present discrepancies from social and individual expectations - i.e., in scientific terms, observations that do not fit preconceived concepts implemented with intentions to describe the evolution of natural relationships - present the keys that lead to enriched human understanding and social prosperity.

This is why the real significance concerning cognitive development lies not in circumstances where everything becomes clear and perfectly fitting at first sight, but in encounters with books, sayings, pieces of art, deeds, descriptions and natural events wherefrom one suddenly realizes that 'there is more to the picture than meets the eye'. As far as the interpretational perspective is concerned, none of the exceptionally significant pieces of art or scientific works standing on the line of our intellectual progress are deeds whose message, relevance and meaning could be momentarily understood. Quite contrary, our first meetings with them are usually typified by semantic puzzlements and observations of enormous intricacies that only numerous, hard attempts of interpretation may turn into wonderful sources of meaningful insights. From the other, expressional perspective, it may be noted that particularly impressive artistic pieces and scientific discoveries have often been shaped at the 'crossroad' points in either the opus of a particular author or the times and trends of an actual cultural era. The nature of learning and advancing proposed herein, according to which the final benefits and the informational richness of the inner states of the system are directly proportional to the moments of hardship, stress, misunderstanding and battling confusion that precede them, may explain the fact that whereas little valuable pieces of art have throughout the history of human culture often been loudly accepted and 'risen to stars' by the community and popular media only to be relatively quickly forgotten and erased from the audience's attention, truly valuable pieces of art (although recall that any quality of a system is dependent on the ontological context of the system's relationships with its surrounding and the epistemological context of its observation, which are both subject to incessant change) have rarely produced such explosive responses and have normally presented the works with slowly revealing meaning. From this point on, a useful analogy may be drawn to natural phenomena as the most perfect 'pieces of art' which are typical of producing even more subtle and quiescent metaphors to human patterns of reasoning.

Incompatibilities between experiential expectations and actual outcomes can be, therefore, appreciated as the keys to successful learning. Such an observation can possess enormous ethical consequences, as we will see in the following sections. So far, it can be noticed that it is not a rejection of either the elements of the experiential reality that do not fit certain preconceptions at the basic perceptual level or the unexpected results of scientific research that do not fit paradigmatically presupposed interpretations of natural events, but wise and patient attempts to revise and rematch and find the place for the given outcomes in the scheme of thinking and representing the world that present the essential aspect of a truly valuable learning and global prospering. Instead of the cultivation of rigidity and insusceptibility to novel ideas and interpretational pathways, flexibility and openness to modifications of the basic relations within our conceptual schemes, therefore, present general cognitive features that imply learning facility and efficiency in the transcendence of failures and disappointments, and transformations to enriched system states.

3. Co-creational nature of experience as the emanation of divine learning

‘All real living is meeting’

Martin Buber, *I and Thou*

‘We need to dance with someone in order to recognize who we really are’

Heinz von Foerster

It has been previously acknowledged that contemporary philosophical approaches towards explanation of cognitive phenomena can be classified to two major categories: objectivistic and constructivist. According to the objectivistic theories of cognition, human experiences present faithful, directly corresponding representations of perceptive impulses of an outer, objective world. Numerous philosophical argumentations and ‘common sense’ conclusions may be supported in favor of a partial invalidity of the objectivistic assumptions in frame of diverse creative domains, including the fields of physical sciences^{9,10}, psychology^{11,12}, anthropology^{13,14}, sociology¹⁵, ecology¹⁶, economic management¹⁷, and ethics^{18,19} and aesthetics²⁰⁻²². On the other side, according to the constructivist theories of cognition^{3,20,23,24}, learning involves a personal assimilation of apparent perceptual similarities and repetitions, and their fixation in forms of objects, qualities and their complex harmonies with the aim of improving the subject’s level of coordinative stability. In that sense, ‘sense organs are specific theories’, as Karl Popper noticed^{25,26}, and every being is ceaselessly creating his own world of experience, even though a natural awareness of this miraculous experiential aspect becomes normally forgotten after many routine assimilations of the ‘objects’ of the experiential world are carried out and they start to be seen as pre-given segments of an ‘external’ world.

The major flaws of the radical constructivist theories of cognition are related to the neglect of common and approximately objective physical patterns of the cognitive surrounding, used as perceptual stimulations for an autonomous construction of experiential worlds. Hence, whereas promotion of objectivistic attitudes in relation to attempts to understand and explain the cognitive background of experiential phenomena may be justified by the verifiable existence of similar experiences from different cognitive points of view, idealization of constructivist approaches in the studies of cognitive phenomena may be supported by an observation that each particular biological structure has a unique ‘view to the world’ and consequently brings forth a unique and unrepeatable Cosmos upon its experiential substrate at every instance of its existence. Since each detail of human experiences comprises a common, ‘objective’ side and a unique and autonomously constructed, ‘subjective’ side, the conflict between constructivist and objectivistic worldviews could be resolved by invoking their mutual, inter-subjective phenomenological dependence. Experiential qualities and objects may be, therefore, considered as neither merely passively detected nor purely subjectively constructed, but as co-created in relation between the biological activity of one’s cognitive neural network and the features of the ‘hidden’²⁷ reality that provides raw impulses as incentives for the subjective construction of experiences. Epistemological features of one’s reasoning and sensing, and ontological features of the world are thus inexplicably intertwined in every result of one’s perception.

If every instance of the world of our experience is no longer seen either as a constructivist creation of certain perceptual constancies and experiential regularities out of a uniform stream of raw impulses, or as a manifestation of a cognitively detached world that inertly develops in front of human observers, the doors for a devoted, high-minded and inquiring attitude towards each experiential detail may become open. Every living and cognitive moment may be realized as a moment of spiritual learning of the being through a constant development of the world of his experience in accordance with the 'co-creational' correspondence between the deepest epistemological aspirations of his being and the divine foundations of the ontological reality. Using the language of religious metaphors, all the details of one's world of experience may be described as emanating from an endless conversation between the being's spirit and God. Such a fundamental 'religious' relationship, proposed hereby as standing at the basis of all experiences, may be connected with numerous religious concepts, including the Hindu observer/observed dichotomy manifested as the mythological division to Brahman and Atman, the Christian concept of the Holy Trinity (whereby the concepts of the Father and the Son may respectively represent ontological and epistemological creative sides that in their togetherness co-create each detail of the world of one's experience, and the Holy Ghost may signify all the sensual informational patterns that arise in their 'touch'), and the neo-Hegelian concept that sees Nature observing itself through the eyes of living creatures, all for the purpose of the evolution of beings until the point when they come to recognize their divine essence as emanating in every minute experiential detail and, so to say, become One with Nature.

Since each experiential moment possesses an inherent potential for learning, it may be inferred that Nature incessantly teaches us not the art of leaning firmly to fixed premises and rules of reasoning and *a priori* interpretations of primary perceptual constructs, but of permanently switching the perspectives of observation and abduction. Empathies with the way the world looks from the eyes of the other, indeed, present the basis for the construction of wise reasoning patterns and beautiful learning experiences. Whereas a resistance towards fundamental systemic changes frequently implies an emanation of manipulative relationships with the rest of the world and disrupting tendencies to change the world without improving oneself, an open acceptance of novelties, changes and mistakes, coupled with a childish willingness to learn on them, may induce a more profound, peaceful and graceful attitude in our ardent 'knitting' of worldly relationships.

Whereas the divine human qualities may slowly degenerate at the foundations of pure solipsism or objectivism, their slow blossoming can be expected in the cognitive world where one knows that wondrous threads of Nature are always posed as responses to one's deepest aspirations, so that these two sides draw the outlines of one's experiential world together on the way of the being's spiritual learning and evolution. Instead of remaining constrained in semi-isolated states of epistemological panic or boredom in the presupposed worlds of either constructivist solipsism or objective representationalism, from the co-creational basis of cognition one would indeed be instigated to run out to see how the world looks from the eyes of the other. Or in the words of Charles West Churchman, 'What is in the nature of systems is a continuing perception and deception, a continuing reviewing of the world, of the whole system, and of its components. The essence of the systems approach, therefore, is confusion as well as enlightenment. The two are inseparable aspects of human living...The systems approach begins when first you see the world through the eyes of another'²⁸.

As a matter of fact, the proposed co-creational nature of experiences may be formulated by a simple saying that 'every quality is a way'. It indicates that every detail of the world of

one's experience presents an emanation of the way between two co-creational sides: the foundations of a being on one and of the divine Nature on the other. Such a proposition is consistent with the fact that only perceptual differences that correspond to boundaries between individually imperceptible uniformities can be identified as perceptual information. Every detail in the world of one's experience is - as we will see later in more detail - thus an invitation to learn, advance and evolve, i.e., a way upon which the spiritual core of one's being approaches the divine teaching core of the ontological features of the world. As far as the idea of learning on mistakes is concerned, a significant parallel may be found in the very metaphor of the Way. Namely, each way denotes a simultaneous separateness and connectedness of its end sides. And like music that can arise only from the alternate moments of approaching and distancing of oscillating nodes, the symbolism of the Way and the ideals of not forcing unilateral influences, but finding balances and Middle Ways in all problem-solving approaches, emanates herein as a guiding principle and an inspiring source of arrivals to versatile harmonious conceptual patterns of human thinking.

Through the co-creational learning and the corresponding cognitive evolution, living creatures possess a potential of evolving to the point when they begin to reflect Nature's divine teaching attitudes in every creative act. Lao-tzu observed that 'the sky and the Earth are long-lasting; that is because they live for others; that is why they are limitless' (Tao-te-ching VII). A similar implicit graciousness and virtue may present an ideal for the evolution of the modern ethics, already inherent in the autopoietic principles of biological self-organization. In accordance with the concept of co-creation, all experiential details and spiritual achievements in life may be considered as partly gifts and partly the results of subjective choices, so that the cognitive balances that compromise individual, self-immersed conceptualizations and the devotion to advance in reading the metaphoric signs of divinely guiding Nature, interwoven in subjective experiences, may be regarded as the pathways to successful learning. Through the co-creational learning, i.e., careful listening to responses of Nature to the subtlest aspirations and intentions posed at the roots of our worldly actions and achievements, one can broaden the limits of one's being and become one with the vastness of the world around and thus, so to say, see oneself in everything and everything in oneself. Because the whole range of personal experiences is internally constructed and brought forth through the perceptual coupling with the 'realistic' character of raw stimulations of the being's surrounding, from the co-creational approach to conceiving the formation of experiential patterns it can become reasonable once again to see oneself in every detail of the world, in accordance with the ancient Hindu mantra '*tat tvam asi*'. As supported by the results of physical observations and yet pointing to an inherent epistemological attitude that opens the door to a frequently forgotten respect towards the ancient religious way of communicating with Nature immanent in every existential detail, the concept of co-creation of experiential qualities may be considered as providing a metaphysical ground permeated with the balance of scientific and religious approaches to action and understanding, required both nowadays and ever for the cultivation of healthy, fruitful and inspiring cognitive attitudes.

4. Experience as derived from the co-creational constraints

'The Warrior of the Light sometimes behaves like water, flowing around the obstacles he encounters.

Occasionally, resistance might mean destruction, and so he adapts to the circumstances. He accepts, without complaint,

that the stones in his path hinder his way through the mountains.

Therein lies the strength of water: It cannot be touched by a hammer or ripped to shreds by a knife. The strongest sword in the world cannot scar its surface.

The river adapts itself to whatever route proves possible, but the river never forgets its one objective: the sea. So fragile at its source, it gradually gathers the strength of the other rivers it encounters.

And, after a certain point, its power is absolute'

Paulo Coelho, *The Warrior of the Light*

From the presented point of view exemplified by the feedback-permeated learning upon failure to accomplish expected aims, it may be inferred that the experiential reality indicates to us not that we are right, but only that we are wrong. In other words, it manifests itself in form of experiential differences (i.e., sensory information) only in circumstances where perceptual expectations do not precisely match the perceptual results. From the cybernetic-constructivist perspective, knowledge could not be, therefore, related to the ontological reality, but instead refers to the subject's knowledge on its possibilities in terms of experiential limitations. 'The Universe does not determine what we do, but only what we cannot do... Our lives are framed by limitations which lie beyond the scope of our knowledge. The space in between is, however, ours so that we can play and choose what to do... Cybernetics is the art of creation of balances in the world of possibilities and constraints'²⁹, were the thoughts of Ernst von Glasersfeld, quite consistent with Lewis Carroll's idea that, as a matter of fact, 'the theories explain quite satisfactorily why there are no bread-and-butter-flies today'^{13,30}. 'We were deliberately designed to learn only by trial and error. We are brought up, unfortunately, to think that nobody should make mistakes... But all my advances were made by mistakes. You uncover what is when you get rid of what is not'³¹, thought Buckminster Fuller in a similar sense.

Each type of experience can be, therefore, defined in terms of constraints that keep us from acting in certain ways, whereas knowledge can be considered not as a faithful representation of the objective reality, but rather as a repertoire of thoughts as active initiators of behavioral patterns that have been proven as viable in the past. However, it is important to note that experiential constraints do not present fixed and unchangeable conditions, but the ones continually modified during the evolution (altogether with the beings' sensitivities), which is another consequence of the hypothesis that evolution proceeds not through a passive adaptation of beings to external conditions, but through a co-evolution of beings and their environments. Because 'everything which is neither information, nor redundancy, nor form, nor constraint – is noise, the only possible source of novel patterns'¹³, as Gregory Bateson noticed, reminding us that 'it is exactly in darkness where the truth resides'³², so that the human quests for the enrichment of knowledge should always be aimed towards the horizons where knowable, certain and physical meet unknowable, uncertain and metaphysical, and wherefrom the limitations of our concepts, mindsets and environmental diversities are being expanded.

An experienced mountaineer is said to carefully observe the possible paths that can lead to the summit with a particular emphasis on the trails that should not be taken before departing on one³. 'An expert is not a man who knows much about a certain profession. An expert is a man who has made all the mistakes, which can be made, in a very narrow field, and thus knows how to avoid them'³², Niels Bohr accordingly wrote. Hence, as each successful programming and computational analysis starts with an investigation of the domain of 'failures', whereupon all the

‘icons’, options, interface objects, properties and possible actions that comprise the domain of interaction between a user and the computer are derived³³, the same approach may be analogously applied to the development of reflective conceptualizations. ‘Failures’ encountered in those domains are, therefore, not the situations to be avoided, but the steps marking every type of evolutionary, informationally enriching development that opens new perspectives and aspects in human cognitive relationships with Nature.

Every form of learning can be regarded as an embodiment of spontaneous reactions to certain periodically repeating experiential circumstances. In that sense, Erwin Schrödinger offered an idea that ‘mind (i.e., consciousness) is related to the learning processes of living matter; the things that it knows how to do are unconscious’³⁴. Everything that we are aware of as existent, therefore, presents an invitation to learning and the consequent evolving of our beings and Nature. ‘Mind is related to the physiological events that are still changing through the mutual interaction with the changing environment... Conscious become only those modifications that are still in the learning phase, until, much later, they become inherently affirmed, well learned and unconscious traits of the given species. Simply saying, mind (i.e., consciousness) is the phenomenon from the field of evolution. Mind illuminates itself only where it evolves, and only when it develops and creates new forms... If we agree on this, it follows that mind and disagreement with one’s self are inextricably linked, and even more, that they need to be proportional to each other. This sounds like a paradox, but the greatest minds of all eras and all nations that...more than others, through their words and deeds created and transfigured the form of art that we call humanity, confirm with their assertions and their lives that they were even more torn apart by inner contradictions. Without that, nothing truly lasting could have been created’³⁴, Schrödinger further argued. From such a thread of thought, we can easily discern that the whole world of our experience is actually our mind learning on the evolutionary path of our beings, as has been already annotated via proposing the co-creational nature of experiences. Also, the mindful lifestyle of a spiritually oriented being implies continual transformations, perpetual seeking, learning and evolving, and all of that upon mistakes and ‘crucifying’ crossroads. This brings us to the autopoietic thesis according to which learning is equal to living, whereby learning at the ‘local’ level is perfectly analogous to the evolution at the ‘global’ level³⁵. It is the effect of learning on mistakes that comprises the subtle thread that links otherwise hardly related concept of learning as an ontogenetic evolution with the phenomena of genetic and phylogenetic evolutions.

If the concept of the co-creational nature of experiences becomes integrated with the idea that every minute detail of the being’s experiential world presents a sign of evolutionary learning of his mind, a consequent conclusion that learning upon mistakes presents the essential purpose of the existence of our experiences may be derived. By reflecting and responding to the cognitive foundations that partially comprise our deepest intentions, desires and aspirations (that all present spontaneous manifestations of our long-term educationally built and deeply ingrained values), ‘hidden’ ontological features of Nature act as the divine teacher in the spiritual and biological evolution of our beings. The informational evolution (noticeable as the increase in the global and inherent versatility of cognitive perspectives) and the spiritual evolution (as the ‘splendor’ produced by assembling various perspectives and worldviews into single, meaningful unities) thus proceed in parallel, as a comparison of the original roots for the words ‘science’ and ‘religion’ (Indo-European *skei* and Latin *religare*, denoting ‘to differ, to divide’ and ‘to connect, to relate, to unite’, respectively) may have already suggested. Every detail of the world of one’s experience provides innumerable sources of both first-order and second-order learning, whereby

the latter can be regarded as learning of the context of learning³⁶. Numerous foundational misconceptions in our reasoning become reflected in the world of our experience, giving us opportunities to discern them and correct the steering values of the ships of our knowledge. However, until ‘religious’ relationships become established between our subjective choices and the deepest values on one co-creational side of our experience and the divine ‘guiding lights’ on the other, such opportunities for the deepest, ethico-aesthetical form of learning and a truly elementary education will, unfortunately, remain ignored.

5. Language as derived from the mistakes inherent in the mutual coordination of human experiences

‘Don’t bite my finger, look where I am pointing’

Warren McCulloch

‘The heart of fools is in their mouth, but the mouth of the wise is in their heart’

Sirach 21:26

So far we have seen how the doors to constructive learning become open only in circumstances marked with discrepancies between the expected and actual outcomes of the experiential development involving our activities or, simply saying, only when ‘the things in life are not going our way’. The origins of language and its development over time can be similarly considered as inherently conditioned by the imposed requirements to surpass actual or potential mistakes in terms of misunderstandings arising in the course of a social communication of meaning, that is, a mutual coordination of experiences. First of all, language, like science, arts, philosophy or any other social discipline, can be regarded not as a conceptual system of objective representations of the universal, observer-independent reality, but as a set of pragmatic metaphors applied for the purpose of mutual coordination of human experiences. Then, either actual emanations or potential occurrences of misunderstandings in these coordinative actions imply an introduction of linguistic signs and directives in communication. Linguistic expressions can be, thereupon, regarded as originally arisen and subsequently enriched only in circumstances pervaded by the need to benevolently point to non-obvious communicational outcomes, so as to avoid actual or potential disagreements or misunderstandings³³. Refinements of human knowledge and the creative interaction with Nature consequently implies the need to continuously refine the compositional structure of language by introducing ever finer and more subtle variations in both meaning and expression.

A simple example provided by Flores and Winograd can be invoked as a conversational prototype that may help in gathering an insight into the nature of primary formation of language and the parallel development of linguistic communicational signs and the corresponding cognitive qualities implicitly involved in the communication of meaning. In this example, one person asks another whether there is some water in the fridge³³. If the latter person by water means the chemical composition attributed to water, even if there was no drinkable water in the fridge, he might reply with ‘yes’, thinking about molecules of water adsorbed on food packages or water circulating along the cooling coils, obviously causing a trivial communicational misunderstanding to arise. A few general remarks can be immediately noticed. First, the need for communication becomes stimulated by specific physiological or psychological dissatisfactions, which presents an unpleasant sensation of thirst in the given example. Then, in order to develop

the ways to overcome future misunderstandings, the persons involved in communication may agree that 'the drinking water' would present a more convenient and precise term for use in the given context, which would lead to an enrichment of the language structure. For example, it was argued that Inuits used more than a hundred different words to denote snow, which presents a natural consequence of the existence of numerous collectively performed activities that include handling of snow and utilization of the produced snowy structures, and where potential misunderstandings may arise³. As it can be realized from this example, misunderstandings normally occur due to incompatibilities of implicit meanings brought forth by the participants in conversation, and the nature of the language development is based on a continual explication of these implicit assumptions and their adjustment to common cognitive needs. However, as we know from Gödel's theorem^{37,38}, the 'weak' interpretation of Heisenberg's uncertainty principle³⁹ and the nature of the hermeneutic circle³³, implicit assumptions could never be completely explicated, whereas the need for languages to follow and reflect the evolution in fineness and inherent richness of cognitive landscapes and the corresponding broadening of the space of potential options of creative activities and meaningful patterns of behavior, presents another continual impulse for the language development. Most important of all, the given example may indicate that an inevitable imperfection of every language implies the need for an involvement of implicit aspirations of participants to match implicit, invisible assumptions of each other in all fruitful and beneficial verbal communications. The core of epistemological attitudes with which one approaches ordinary communications of meaning may be correspondingly returned from the cultivation of literal, acontextual and superficial comprehensions to the very heart of human beings, i.e., to the domain of implicit ethics that in the form of our deepest aspirations, intentions and desires lies at the foundations of our knowledge, cognition and communicational encounters.

Problems in human communication, therefore, originally spring from the level of implicit assumptions and epistemological foundations upon which our comprehensions of language, knowledge and behavior are formed. Objects depicted in linguistic communication do not present perfectly faithful representations of the objective reality, but can be rather considered as operational relations used for the purpose of avoidance of misunderstandings during the mutual coordination of human actions and reflections. It is worth recalling that all linguistic creations, including all artistic, political and religious works, present consequences of interpretation of specific human actions and ways of forming experience as unviable, inconvenient and unbeneficial; for, in a world where everything is observed as 'the way it should be', there would be no need for any orientations, guiding signs and coordinative indications. Even the majority of ideas that comprise this and the other author's ethico-philosophical works have been formed through the moments of dissatisfaction with personal pathways of reasoning and behavior (i.e., learning on mistakes), in large extent arising out of either objectivistic and egotistic rationalizing about beings, objects and events of the world according to personally imposed quality standards and with disregard of empathic 'viewing of the world from the eyes of the other', or the personal inability to express freely and spontaneously due to an enormous pressure of the norms of perfection. It is, therefore, clear that the conflicts of polarities within the concepts of our thinking and the descriptions of experiential phenomena leave traces at the level of language, which in turn through social interactions subsequently modifies the pathways of human thinking. The interaction of human thinking and language, thus, presents a form of a feedback circle in which language can be transformed into either a 'bad master' whenever linguistic descriptions become identified with the objective nature of the world of our experience, or a 'good servant' whenever

linguistic structures become accepted as metaphorical expressions applied in the creation of beneficial directives in the mutual coordination of experiences and the corresponding deepening of the underlying ethical aspirations and spiritual values.

‘We seem to have been brought up in a world seen through the descriptions of others rather than through our own perception. The consequence is that instead of using language as a tool to express thoughts and experiences, we accept it as a tool that determines our thoughts and experiences’⁴⁰, was thence the opinion of Heinz von Foerster. For, not only common linguistic expressions, but all scientific concepts, including ‘atoms’, ‘cells’, ‘superstrings’, ‘organisms’ and ‘stars’ could be considered not as representations of objectively existing entities, but as human inventions applied for the mutual coordination of experiences, whereas ‘observers in action primarily look into themselves; the things that they describe are their views on how the world looks to them’⁴¹, as von Foerster further noticed. Scientific observations, however, could not be purely constructivistically defined as ‘applications of the biological instrument of analysis to analyze itself’²⁴, so that every ultimate cognitive theory would eventually end up in the brain writing itself down⁴² in repeating lines and realizing that ‘if human mind would be simple enough to be understood, then it would be too simple to understand it’⁴³. In reality, such observations of one’s foundations of observing present not vain and futile attempts to compose both perfectly consistent and complete systems of reasoning, but pathways to an endless evolution of our thinking and observing. Scientific concepts are neither objectivistic ones derived from passive and direct correspondence between features of an observer-independent reality and abstract scientific relationships, nor closed and self-iterative, solipsistic cognitive circles, although useful features could be discerned from both approaches to study of inexplicably intertwined cognitive and scientific phenomena. For example, by merging the two concepts of scientific observations in the concept of experiential co-creation, one may end up in a reign of wonderfully inspiring experience of phenomena of science and communication as being co-created in relation between an inherent and deliberate creativity of humans and the ontological impulses of the teaching Nature, whereas the endless evolution of pathways of knowledge, spiritual wondering and natural diversity may flourish on the way.

In the context of the proposed error-guided evolution and learning, it is important to recall that whereas perfectly fitting analogies would present unfertile equilibriums in the course of such an evolution of knowledge, only permanent imperfections in spite of human aspirations to describe the organization of reality in the most satisfying and faithful way can keep the wheels of evolution of both mind and Nature rolling. Another important consequence of the stance proposed herein is that meaningful and constructive assertions from the point of view of the evolution of knowledge and understanding are rarely typified by passive affirmations and fascinations with superficial, literal appearances, but present expressions of a seemingly puzzling meaning and an implicit questioning through which one develops new and richer perspectives in comprehending and representing natural phenomena. However, when diversity and interactional intricacies become overwhelming in the encounters and dialectical conflicts of versatile worldviews, appeasing utterances that spring from aspirations to find common grounds, bring closer and unite such a diversity may prove to be fruitful, which is consistent with the fact that ‘the major doctrine is that there is no major doctrine’⁴⁴ when it comes to creative participation in the evolution of any form of knowledge or autopoietic structure. Nature is often compared to a diamond with an infinite number of crystalline faces, so that owing to the fact that every single perspective contains inherent cognitive limits, observational horizons and ‘blind spots’, mutual complementarity of various perspectives of its observation and comprehension needs to be

acknowledged for the sake of attaining a holistic representation of its magnificent organization⁴⁵. In other words, the evolutionary diversity of cognitive worldviews can be fostered only by a complementary devotion to their assembling into meaningful wholes, and *vice versa*. Consequently, the essential equilibriums that support life processes can be maintained only through their continual ‘losing’ and changing, so that evolution may be witnessed as the only way to preserve sustainability, and *vice versa*.

It is not only the potential for disagreements that stands at the bottom of the development of linguistic abilities and its subtle evolution, but all other forms of learning, including mental reflections, arise as the consequences of mistakes in form of either mismatching or imperfect functioning of certain aspects of reality compared to how we imagine or desire them to be and evolve. When one juggles the ball on a meadow, the separate concepts of ball, ground or body do not arise, and the entire experiential performance is merged into a single whole. The concept of the ball will arise only if it becomes mislaid in a bush or punctured, i.e., only in case something upsets our game. Similar to this, the awareness of objects arises specifically due to our actions ‘not going the way we intended’, as was in more details elaborated using the concepts of ‘present-at-hand’ and ‘ready-at-hand’ (i.e., *vorhanden* and *zuhanden*, respectively) in the works of Martin Heidegger⁴⁶. From such a proposed nature of language, it becomes clear why the better one knows ‘something’, the harder that ‘something’ can be described. For example, learning a new language or any practical skill requires an involvement of voluntary actions and conscious reflections in order to avoid undesired and incorrect outcomes, whereby these conscious efforts gradually fade and become substituted with spontaneous and unconscious expressions and behavioral patterns, which enables one’s consciousness to become occupied with higher levels of learning, including the composition of refined ideas in linguistic terms or refining the interactive interface of performance of the practical tasks learned. The better one knows something, the less he is aware of this knowledge, which can be applied to every skill, including the art of graceful living. Herein lies the reason that may explain how over the eons of evolution, spontaneous and purely natural expressions and abstractions have been resulting in ever more beautiful behavioral and imaginative patterns. However, all astonishing expressions, including impressive artistic performances, require a precise balance between spontaneous (i.e., learned) and consciously expressed (i.e., yearning to learn) aspects. Likewise, in order to further support the ideal of harmony between analytical rigor and inspiring imagination within each pragmatic act of ours, the corresponding balance between knowing and learning needs to be applied during our walk along the endless line of horizons of our knowledge and attempts to stretch them towards embracing the coasts of new ideas and treasureful cognitive worldviews. In that sense, the most successful education is the one wherein the more we proceed along its course, the more significant and enormous the concealed, underwater parts of the icebergs of our knowledge become. Such course in the evolution of knowledge is consistent with the continual informational enrichment of the cognitive aspects of human experience that, as a matter of fact, correspond to ever increasing stimulations to learn and evolve by carefully studying diverse informational patterns of our cognitive landscapes.

6. Ethico-aesthetical and scientific consequences of learning through errors

‘It is because you are a very small animal that you will be useful in the adventure before us’

Winnie-the-Pooh

Since living, cognition, changing and learning present simultaneously occurring biological phenomena that endow each being with an intrinsic form of becoming, every type of communication can be accepted as predisposed to develop only on the basis of inherent mistakes and consequent problem-solving attitudes. So far we have seen that elementary, first-order experiences, second-order mental reflections upon the first-order cognitive operations, and language develop through continuous searches for the ways to overcome the perceptual and conceptual deviations from our experiential expectations and potential or actual communicational misunderstandings, respectively. The arising of new insights, conclusions and common (i.e., compatible) meanings at any social level of communication is conditioned by the appearance of misapprehensions within the mutual accommodation of meanings⁴⁷. 'Unanticipated novelty, the new discovery, can emerge only to the extent that his anticipations about nature and his instruments prove wrong... The formations of new theories are, in general, preceded by a period of an open professional uncertainty. As can be expected, such an uncertainty emanates from the puzzles of normal science being left without adequate solutions. Refusal of the actual rules is a prelude to the search for the new ones'⁴⁸, Thomas Kuhn claimed in the context of a historical investigation of the general trends in scientific community following and preceding the phases of enrichment of scientific knowledge. Karl Popper similarly noticed that 'every fruitful scientific work starts from a problem'⁴⁹, whereby Alfred North Whitehead observed that 'in formal logic, a contradiction is the signal of a defeat: but in the evolution of real knowledge it marks the first step in progress towards a victory'⁵⁰. And indeed, the results of some of the most valuable scientific experiments in the history of science, such as Michelson-Morley and Lummer-Pringsheim experiments, Chadwick's investigation of β radioactive decay and Kepler's investigation of planetary motions, presented deviations from the actual explanation models of those times and thereby induced either their corrections or the formation of new theories⁷. Knowing that only deviations from the paradigmatic flow of research experience may lead to foundational improvements in scientific comprehension of reality, not experiential outcomes that flow seamlessly in concert with one's desires and expectations, but the roads interspersed with puzzles, enigmas and questioning obstacles may be regarded as the pathways to significant achievements over the course of living.

The inevitable immanence of trial-and-error approaches in the advanced structural design, which has recently been discussed by the author^{51,52,53}, implies that every single result of scientific investigations directed towards either a detailed comprehension of the physical processes (as essential for the intrinsic advancement at the level of the practical achievements of science and technologies) or a widening of the range of achievable outcomes of practical synthesis procedures, either successful or not, stands as a sign of an equal importance to a serious scientific mind, oriented not on a narrow target of immediate accomplishments, but on a large Gestalt of the natural order. An immanence of the trial-and-error aspect in the practice methodology of the contemporary chemistry and engineering implies that mistakes and 'not-how' may present even more significant steps than attractive achievements and 'know-how' on the road towards a comprehensive advancement of the conceptual network of scientific knowledge. In a wide scheme of aspirations towards the informational enrichment of human experiences and understanding of nature and life, each small research, irrespective of its immediate or near-term success, always stands as an enormously significant potential source of knowledge advancements and innovative practical achievements.

In the context of chemistry, we may also be reminded that biological, self-assembly syntheses that are nowadays posed as the major, 'bioimitation' ideal in the advanced chemical

processing fields are, quite contrary to artificial production methodologies, based on molecular recognition effects that comprise inherent imperfections and mistakes, although overcome by high selectivity criteria⁵⁴. Similar stochastic effects are inherent in the genetic evolution, presupposed to occur through DNA replication errors and random mutations, subsequently eliminated or sustained at the ecosystemic level by the means of specific selectivity criteria. Nevertheless, instead of the humanly imagined ‘perfect’ design that never looks back and corrects mistakes, an essential element of the natural synthesis pathways is detecting and correcting errors *en route* to the final product⁵⁵. With an eye towards biological processing routes, the concept of process-efficiency would need to be correspondingly revised and redefined if the science is about to achieve the control over molecular architectures that would resemble the one existing in the natural world⁵².

The bridge that connects important scientific inventions with their everyday utilization may be similarly represented as a three-stage process that starts with ‘dreams’ and continues with ‘nightmares’ (or the so-called ‘valley of death’ phase), i.e., periods of interdisciplinary search for the ways to surmount an array of social, technological, economic and ecological obstacles towards the realization of the ‘dreams’ in the third phase called ‘reality’^{56,57}. Likewise, all bright human ideas and pragmatic visions become inevitably confronted with the Biblical ‘deserts’ that need to be crossed in order to arrive at the destinations of the ‘promised lands’, eventually blossoming with the results of our creativity and work. Moreover, instead of becoming obsessed with already achieved successful results of one’s work, never-ending reflective encounters between inner aspirations, visions and desires to reach valuable novel harmonies and solutions on one side, and actual problems, mistakes and failures on the other, present the key to every type of progress.

Considering the necessity of changing and learning for the sake of living, the acknowledgement of an irreproducible character of both subjective experiences and fruitful social communications, as based not on establishing preconceived norms, meanings and agreements, but on routine revisions of one’s epistemological foundations, naturally emanates. Beautiful outlines of graceful common expressions, scientific humbleness and poetical utterances in comparison with the languages of law⁵⁸, administration, army commandments and fixed ideas rest on an implicit uncertainty and readiness to turn back and openly revise one’s own premises of reasoning. A new light may be thrown upon the contemporary problems related to a frequently nihilistic and frivolous character of modern arts and the consequent devaluation of ‘artistic’ behavior with a realization that the genuine purpose of original artistic expressions is not a simple subversion of traditional and actual patterns of observing, thinking and behaving, but an invitation to ‘look back into oneself’, review one’s deepest values from novel perspectives and bring them into fruitful questions. In accordance with Plato’s formulation of the basic problem of philosophy as ‘finding an unconditional and absolute ground for all conditionally derived expressions’, almost all philosophical approaches aim towards ‘debasement’ formulated ideas, concepts, proofs and relationships, and showing how they rest on the grounds of not firm and eternal truths, but fragile assumptions of reasoning, so that faith, in a certain way, presents the root of all knowledge. ‘A profound synthesis between beliefs, whatever they may be, and the conditions of knowledge is what we have named ‘wisdom’, and it seems to us that it is also the subject of philosophy’⁵⁹, was accordingly the opinion of Jean Piaget, whereby Ludwig Wittgenstein noticed that ‘the things that I know, I believe in’⁶⁰. Instead of deterministic and firmly assured responses, the true ethics and aesthetics lies in hoping, believing and occasionally noting the famous ‘I don’t know’, which opens the door for an endless evolution of the space of

human experience, knowledge and behavior. In that sense, a spontaneous acceptance of our uncertainties - similar to a child that learns how to walk without lingering its attention on the past falls, but on the moments when the desired balance has been achieved⁶¹ – presents the pathway towards a substantial enrichment of communicational outcomes.

Like any other systemic concept, the idea of every form of learning as learning on mistakes may be distinguished as immanent within numerous pictorial natural events. Fertile lands, rainbows, butterflies and pearls as formed through not refuting, but constructively accepting and transcending rains, cocoons and irritating particles of dust, may possess a significant metaphoric meaning for the development of innumerable other ethical norms and concepts. A circular, feedback-permeated chain of effects between the natural metaphors and scientific concepts, along with their mutual support and development over the course of the planetary informational evolution, may be clearly acknowledged as a result. Such an observation obviously calls for tighter and more profoundly intertwined connections between ethico-aesthetical narratives and the management of scientific and technological development.

The composition of Plato's Phaedrus, one of the cornerstones of the ancient Western philosophy, neatly reflects the proposed idea of derivation of all knowledge, including the development of the most significant human qualities, from mistakes. In this work, Phaedrus wants to hear Socrates' opinion on the thoughts about love delivered by his friend Lysias, according to which love was presented as the inner force of not blossoming inherent creative potentials of human beings, but numbing human ingenuity. Socrates at first becomes concordant with this contemplation, finishing his discourse with the idea that 'as wolves love lambs so lovers love their loves'. However, as the dialogue was about to end, Socrates feels as if something was wrong, and notices: 'I am beginning to see that I was in error...That was a dreadful speech which you brought with you, and you made me utter one as bad', and subsequently continues with delivering one of the most beautiful speeches in the history of philosophy⁶². In the area of religious studies, the Biblical chapter of Revelation presents a remarkable conceptual metaphor of the processes of learning and evolution, wherein after the long battles as analogies of the contradictory, dialectical encounters and moments of confusion in the second stage of the learning process scheme, one reaches the moments of brightness and clear flow of 'the water of life' (Revelation 22:17) that correspond to novel stages in the evolution of knowledge and life.

Mistakes and imperfections present unavoidable elements of all learning encounters with experiential details, as well as the inherent parts of all forms of human creativity, including the hypothetically 'perfect' tasks and unequalled masterpieces. One of the biggest mistakes in social communication belongs to aspirations to avoid all mistakes therein, whereas only when one freely expresses its uncertainties, dilemmas, weaknesses, imperfections and the essences of a humane fragility is that the 'dams and barricades' of one's ego become fully raised (recall herein that the word 'satanic' originates from the Hebrew expression which annotates the obstructed flow³¹), allowing the 'rivers' of our creativity at various expressional domains to start freely flowing. The spectrum of options that leads towards 'knowing thyself' (which, by the way, presents the aim of all sacred pilgrimages) becomes diversified and widened as one's actions become oriented not to enclosing oneself by implementing the norms of overprotection, cognitive safety and tracing only the known paths of behavior, but to unpredictable communications, expressional challenges and adventures of the mind. In this sense, it may be recalled how Edward Gibbon described the fall of the Roman Empire on the basis of an observation that its citizens 'in the end wanted security more than they wanted freedom'⁶³.

Correspondingly, the pathways abundant with obstacles and risks present the only ones that lead to truly valuable and significant discoveries. Without facing problems and perplexities, neither individual nor global progress could be imagined. All problematic situations, such as attempts to vainly fit the reflections of our ‘mistaken’ actions or desires into the frames of our ideals of divine behavioral ethics and aesthetics, should therefore be experienced not as sources of despair, but as gifts to our ethical flourishing and spiritual advancement. However, the fear of mistakes, caused by either the conformist tendencies to submit our creativity to given authorities or social standards (further in life reinforced by the conditional educational methodology), or a self-oriented and egotistic rigidity towards revealing the bases of our reasoning and conduct, provides serious obstacles to the development and evolutionary harmonization of our beings. ‘Let us think something new, even if it be wrong. It is better to do that. Why should you not try to hit the mark? We become wiser through failures. Time is infinite. Look at the wall. Did the wall ever tell a lie? It is always the wall. Man tells a lie, and becomes a god, too. It is better to do something; never mind even if it proves to be wrong; it is better than doing nothing...Be active; and wherever there is activity, there must lie a difference. Difference is the sauce of life; it is the beauty, it is the art of everything: difference makes all beautiful here. It is variety that is the source of life, the sign of life. Why should we be afraid of it?’⁶⁴, argued Swami Vivekananda (whose name means ‘joy in differing’) in this sense, reminding us that a trustful and empathic imitation on one side and an originality, difference and self-responsibility on the other need to be precisely balanced within every successful learning and evolutionary approach to cognitive and mutually dancing interactions.

All scientific and common linguistic descriptions, as a matter of fact, necessarily imply creations of polarities (as metaphoric reflections of the observed natural/experiential polarities and relationships consisting thereof), which also explains why every observation and critique that invokes or defines the concepts of beautiful, good and viable actions implicitly outlines the concepts of vulgar, evil and adverse deeds. And that is why many Oriental philosophies of ethics, including Taoism and Buddhism, have argued for the inconvenience of exposition of any opinions and provision of any judging attitudes. On the other hand, some narrative philosophies of ethics, like Hindu Bhagavad Gita or the Christian Bible, contain implicit George Spencer-Brown’s imperative of ‘drawing the distinction’, for only through such a creative standpoint the global evolution of life and cognition may be further instigated. Every difference, though, divides a given uniformity to an ‘inside’ and an ‘outside’, and can be regarded as the line of connection and separation at the same time, reminding us of the symbolism of the Way. Consequently, the continuous evolution of scientific thinking and natural organization in the wake of solving certain problems produces novel existential hazards and adventures that invite human observers to give up their inert thinking habits in favor of more awakened, self-conscious, re-searching and revisionary reasoning attitudes. In fact, a potential for the development of mind reflections as precursors of scientific reasoning exists only in circumstances abundant with dangers and risks, so that a circular, feedback nature of the evolution of life and reason on their inherent mistakes may be clearly outlined thereupon.

Instead of depreciating circumstances abound with ‘stumbling stones’, cultivating a gracious will that through a constructive receptiveness, trust and faith transforms such obstacles into ‘stepping stones’ of our cognitive advancements, might present a more convenient attitude to personal, social and scientific development. The whole Biblical story of the Christ’s life may indicate how the paths of our highest development and enlightening work are marked not with worldly acclamations and acceptances of our beings and expressional patterns, but with doubts,

refusals and misunderstandings. ‘For when I am weak, then am I strong’ (Corinthians II 12:10), as St. Paul the Apostle noticed. Each heroic being has consequently become brave, strongly devoted, virtuous and exceptionally sensitive not only because of care and love involved in supporting the growth of some fragile beings of the world, but particularly because it used to be weak and shivery once. ‘The warrior of light does not always have faith. There are moments when he believes in absolutely nothing. And he asks his heart: Is all this effort really worth it? But his heart remains silent. And the warrior has to decide for himself. Then he looks for an example. And he remembers that Jesus went through something similar in order fully to inhabit the human condition. ‘Take away this cup from me,’ said Jesus. He too lost heart and courage, but he did not stop. The warrior of light continues despite his lack of faith. He goes forward and, in the end, faith returns. That is why they are warriors of light. Because they make mistakes. Because they ask themselves questions. Because they are looking for a reason – and are sure to find it’⁶⁵, Paulo Coelho wrote. The lives of many sages, including Gautama Buddha, Paul the Apostle, prophet Muhammad, St. Augustine, Milarepa, St. Francis of Assisi, St. Ignatius of Loyola and Guru Nanak Dev may support such an idea that even the most sacred roads of human achievements are paved with a strong willingness to advance forward (stage I of the proposed learning scheme), encounter mistakes (stage II) and consequently repent in form of revisions of implicit values and patterns of reasoning (stage III). Seemingly paradoxically, the moment one realizes that the acceptance of uncertainties, mistakes and the fields of unknown paves the way for everyone’s progress and evolution, he indeed starts to see, like the one of whom the following words were written in a sacred scripture from the Orient: ‘When he becomes enlightened with the knowledge that comprises unknowing, his knowledge reveals all, just as the Sun during the daylight illuminates everything’ (Gita 5:16).

And like the Sun that in its rise never suddenly and explosively overwhelms the sleeping planet with its light and instantly dims the distant stars, but rather slowly and almost imperceptibly brings out the new day, the precise balance between respecting conformity in relation to the creative pathways of our tradition on one side and a self-determinacy to shine the light of our creativity and impressions that our beings are abound with on the other side, needs to be correspondingly achieved in the frame of an ideal of the peaceful evolution of ideas, worldviews and the norms of conduct. ‘Every scribe which is instructed unto the kingdom of heaven is like unto a man that is an householder, which bringeth forth out of his treasure things new and old’ (Matthew 13:52), as the Christ’s words remind us that intertwining novelties and tradition, pining to know and yearning to give, as well as the spirit of adventure and the determinacy to love may present the key to wise acting and reasoning. For, as human beings we are posed at the holistic intersection of the lower complexity levels of atomic, molecular and cellular interactions on one side and social, ecosystemic, biospheric and cosmic systemic domains of the natural organization on the other, wherein each of these levels is governed by a strange and wondering interplay of ordered and random aspects of their development. Any entity of such a marvelous holistic organization is limited by constraints imposed by the levels below and above, similarly to the process of composing linguistic expressions being conditioned by the alphabetic and grammatical constraints from the lower complexity side and an individual and social context of meaning from the higher one⁶⁶. Looking either up or down, we become faced with non-resolvable complexities and the sources of an endless exploration, deepening of the domains of our knowledge and its application, and thus co-evolving human minds and their environments in parallel. For, the reflective ‘involution’ of human minds as an intellectual refinement of the conceptual models of reality and the philosophical foundations of knowledge

and being develops interdependently with the cosmic 'evolution' as a refinement of the informational patterns that present perceptual stimulations for cognitive systems throughout the Nature. Considering that 'the horizon of our being is limited by what we can see, whereas what we can see is limited by the horizon of our being'⁶⁷, as Ludwig Feuerbach noted, the story of evolution is the one of a continual refinement and informational enrichment of the horizons where epistemological and ontological spheres of human cognitive reality meet and co-creatively bear the 'teaching' signs that point to the divine experiences of love and wonder as the drives for a never-ending evolutionary stretching of the cognitive horizons of our beings.

And as such balance between love and care that relate us to our biological foundations on one side, and curious eyes that look upon wandering stars and the mysteries of knowledge on the other becomes further instigated, we may be reminded that flying kites of human creativity can present bright signs only as long as they fly and as such are still attached to the anchoring bases, as well as that, according to the proposed three-stage process of learning and the dialectical nature of the evolution of knowledge, the act of raising a kite up in the air must proceed with us running and facing the force of the wind, whereby once the kite starts flying, we may finally turn our back to the wind and through the moments of relaxation and gentle dreaming together face the same horizons again.

7. The ideals of an ultimate education

'True words need not be the chosen words;
The chosen words need not be true words.
Good man does not argue,
The one who argues is not a good man.
Wise man does not know a lot of things,
The one who knows a lot of things is not wise.
Sacred man does not collect (for himself):
He lives for the others,
And becomes ever richer;
He gives to other people,
And lives with ever greater treasures.
Heavenly Tao
Blesses, but does not bring harm.
The way of sacred man
Amends but without battles.'

Lao-tzu, Tao-te-ching LXXXI

'And if any man hear my words, and believe not, I
judge him not: for I came not to judge the world, but
to save the world'

John 12:47

From the constructivist and autopoietic standpoints, learning is viewed not as a process of accumulation of representations of an objective reality, but as a continual process of transformation of beings through changes in the capacities of the respective neural systems for their own re-creation⁶⁸. Learning is inherently related to modifications of the perturbation domain - i.e., spectrum of the environmental effects that the being is constructively aware of and susceptible to - and is, consequently, not referring to ideas 'stored' within the brain, but to one's interaction with the corresponding environment. This is why each instance of living may be

considered as a learning moment. Instead of being regarded as a social privilege and right, learning thus presents an inevitable way of the human existence^{40,69}.

Education is, therefore, not limited to school hours and formal interactions between teachers and students, but is immanent in every instance of one's existence. Inexhaustible sources of enrichment of ethico-aesthetical patterns of conduct may be, indeed, derived from a pure and patient observation of natural phenomena. As a matter of fact, metaphorical reflections of natural relationships upon the substrate of scientific and everyday dilemmas have initiated long-term solutions to numerous problems, including the ones that paved the way for the evolution of science. Importance of the mastery over analogous, systemic reasoning and seeking ethical and epistemological evolutionary guidelines in numerous surrounding natural relationships and patterns would naturally be instigated from such a perspective. The creative roots of scientific and philosophical speculations become, in accordance with such a systemic standpoint, after a long journey returned to their ancient origins, that is, to beautiful minds endowed with the learned capabilities of 'common sense', naturally inspired observing and imaginative, metaphorical reasoning.

It is known that memory and learning are not limited to the brain activities, but extend throughout the whole organism and its structurally coupled surrounding. The evidenced memories of the immune and muscular systems⁶⁹, as well as the fact that neural, endocrine and immune systems are interlinked in a single psychosomatic communicational network within the organism⁷⁰, may support such an integrative view of the biological phenomenon of learning. It is known that repetitive mental tasks are each time performed via different neural patterns. Remembering and recognition, therefore, correspond not to cognitive repetitions of structural invariants that are used to invoke reflectively 'replicated' entities (ideas, symbols, etc.), but to functional abilities of a cognitive system to always re-create certain ideas in a novel way. From this point of view, instead of the traditional educational emphasis on reproduction of symbols and ideas, the emphasis in the modern approaches to education may be switched to the teaching tendencies to invoke novel and always unique creations of ideas through a stimulation of autonomous, self-responsible and 'adventurous' mind reflections.

Unnatural unilateral communications of the traditional forms of education might be, therefore, productively transformed into the ones of mutual learning and dialogical, round-table consensual revisions of both the foundations of proposed or actual approaches, ideas and interactions, and the wide ranges of their versatile effects. Instead of insisting upon the mechanistic repetition of ideas, individual beings may through this approach become spontaneously overwhelmed by the sense of wonder and inner inquiry, and inclined towards constructive reflections and participations in open conversations; because 'to know how to wonder and question is the first step of the mind towards a discovery'³¹, as Louis Paster observed. Such a creative attitude of respect of the cognitive autonomy of living creatures and providing not officious and fixed procedures for investigation, but subtle and humbly twinkling 'guiding stars' that only point towards the ways that are to be subjectively discovered and crossed alone is in sharp contrast with the traditional forms of education achieved through instructional conditioning. This is why in the context of a bright education we may be reminded of one of Antoine de Saint-Exupery's messages: 'If you want to build a ship, don't drum up people to collect wood and don't assign them tasks and work, but rather teach them to long for the endless immensity of the sea'. The essence of a creative education may not be related to reinforcing routine, preprogrammed operational repetitions as much as to an awakening an inquiring wonder and a genuine desire to seek knowledge. Brilliant teachers consequently often

leave the impression that ‘they know, but won’t tell’⁷¹, particularly because of their awareness that instead of blunt and frequently egotistic presentations of correct answers to others, participants in communication ought to be indirectly, through the provision of metaphorical pointers, oriented towards right ways in their individual and unique quests for solutions of the faced problems. Consistent with the fact that the most significant human qualities could never be directly given, but only pointed to^{72,73}, a wise education strews the roads of individual quests with secret signs, directives and sources of wonder, knowing that ‘they that seek the Lord understand all things’ (Proverbs 28:5).

This is why the beauty of beings is not primarily present in their forms (including the external appearance), but in the inner processes and inquiring attitudes: that is, not only in the things that the beings know, but mostly in the things that they seek to find and desire to know, i.e., not only in the aims that they have reached, but in the paths that they are traveling on. The beauty and significance of learning, therefore, lie not in learned patterns and attained aims, but in the very process of learning. In a Zen story, a disciple asks his master about the time that will need to pass before he reaches a mastery over his dharma. ‘Ten years’, replies the master. ‘But if I hurry a lot’, asks the disciple. ‘Twenty years’, says the master. ‘But if I start hurrying as much as I can?’ ‘Then, maybe never’, answers the master, letting the disciple discover that the secret of an effective learning lies not in a blind orientation towards aims and successes, but in the very journey. In accordance with the systemic nature (i.e., the one applicable in endless contexts) of all the brilliant expressions and metaphoric relationships, a genuinely beneficial education is characterized not by a quick attainment of the desired cognitive states, but by a long ‘living’ with the questioned propositions and ideas, and their patient reflecting upon versatile natural relationships. ‘Some people never learn anything because they understand everything too quickly’, used to be Alexander Pope’s norm in that sense, whereas Friedrich Nietzsche’s Zarathustra used to argue that ‘slow is the experience of all deep fountains: long have they to wait until they know what hath fallen into their depths’⁷⁴. In accordance with the proposed directly proportional link between the level of invoked puzzlements, enigmatic amazements and obscuring obstacles in attempts to interpret certain works and patterns of Nature on one side and the potential for interactional learning and advancing on the other, the natural way to employ once thoroughly understood human works for the purpose of learning is to metaphorically reflect their constituent relationships upon various novel experiential patterns (i.e., to experience them from various novel perspectives), so that all human deeds and experiential details may be consequently regarded as inexhaustible sources for the improvement of one’s comprehension of existential reality. Needless to say, such an art of switching and comparing perspectives and their intersectional patterns, and deducing new ideas and relationships requires a fine cognitive balance between analytical rigor and imaginative intuition, altogether guided by the ‘hidden’ drives of our deepest ethical values and inner aspirations.

Despite emphasizing the very ‘journey’ instead of ‘destinations’ within all fruitful educational approaches, one of Heinz von Foerster’s teaching imperatives has been: ‘Let there be vision: and there was light’⁴⁰, reminding us that the future may indeed be created by our choices, desires and aspirations. For, ‘where there is no vision, the people perish’ (Proverbs 29:18), as King Solomon professed. Bright visions may indeed miraculously create in front of us numerous options that lead towards their evolving and realization. Invoking a delightful hope and visions of bright, idyllic and praiseworthy outcomes of our devotion to teaching presents one of the key elements of every successful education. For in order not to repeat the devastating mistakes of either individual talent-wasting or the whole lost civilizations⁷⁵, invoking errors and learning on

them ought to be precisely balanced, whereas the harmony and sustainability of such an evolutionary balance may be indeed determined by the bright visions led by aspirations to learn, advance and evolve. However, even then, one ought to know that if one's actions and choices are guided by the tendencies to improve oneself solely, the paths to the deepest and the most profound education will be closed. Only through one's devotion to help others reach the aim of a graceful evolution of spirit do the doors to a true and all-encompassing education open. 'Is it that teachers know that they carry the kiss of death which will turn to tastelessness whatever they touch or teach anything of real-life importance? Or is it that they carry the kiss of death because they dare not teach anything of real-life importance?'³⁵, asked once Gregory Bateson, recalling a similar circular causality that pervades not only the educational relationships, but all natural patterns in general.

It may be noticed that the major erroneous assumption at the basis of the conditional learning is not present in the ideal of training through rewarding and punishing diversely produced outcomes, but in the objectivistic, observer-independent evaluation of these processes. Namely, the idea that the external observer can have a thorough insight into the inner processes of the observed beings, such as conscious phenomena, intelligence, attention and emotions, presents one of the most inclement delusions of all times. The purposeful and conditional educational approaches based on implicit commands can end up in 'producing' disciples inclined to the extremes of intolerance, fanaticism, thirst for fame and superficial success, exposition of either non-consensual unilateral autocracies or resigned submission to authorities, and unnatural rigidity towards revisions of once learned rules of conduct. On the other side, knowing that every being is a 'black box'⁷⁶, i.e., an operationally closed system and a source of unpredictable, always surprising responses to environmental stimuli, an enlightening education might base itself on reverent invitations towards an autonomous opening of novel perspectives in the process of learning. 'We can educate others only through providing self-examples'⁷⁷, was the idea of Leo Tolstoy, and indeed, the most significant human qualities could not be instilled inside others, but only implicit expressions of such qualities can unnoticeably awaken similar traits in them⁷⁸. A constructive learning can be initiated only through examples, i.e., through having the teachers radiate with aspirations to learn, to be on the sacred path of exploring the divine aspects of the experiential reality, to be susceptible to fundamental changes of perspectives, and to accept all and everyone as immaculate sources of individual and global development and prosperity. This is why the true happiness lies in being in the presence of beings that do not enclose their love, attention and respect towards ourselves solely, but radiate with their love and inquiry towards the whole world. Deep ethical and spiritual traits are being developed by spontaneous, but attentive learning from such examples.

Whereas the objectivistic approach to explanation of cognitive phenomena and the experiential order through references to 'universal' or 'neutral' perspectives and worldviews naturally results in the 'battles' for the privilege over the sole ground of 'truth'^{79,80}, an acknowledgement of the co-creational character of cognitive phenomena, related to the existence of an infinite set of relevant cognitive perspectives, the semi-subjective nature of knowledge, and pragmatic viability instead of truthfulness at the heart of scientific assertions, naturally edifies a rational attitude according to which each individual being requires specific incentives and answers to its unique cognitive needs and even identically formulated questions and aspirations. Each being uniquely and irreproducibly interprets formally identical expressions at every new moment during the flow of its existence and continuous becoming. Instead of considering human ideas and assertions as truthful or not, each form of communication can from this perspective be

regarded as only more or less viable in the course of a mutual coordination of human experiences towards the transformation of seemingly irrational, abnormal and enigmatic aspects of natural representations to socially convenient and constructive ones⁸¹. Any fixed procedure of learning could not be justified thereupon, whereas constructive learning may be typified by the switch from a programmatic approach of inert, unquestioning and repetitive ‘understandings’ to a creative fosterage of imaginative, contextually oriented and vividly refreshing comprehensions of the experiential reality.

The traditional education has been mostly based on learning to recognize situations and react to them in accordance with the pre-given models of behavior, and as such has been minimizing both the potential encounters with errors and the potential of individual and global creative advancements. Mistakes are in an objectivistic organization of knowledge considered as undesired, and are correspondingly either ignored or refuted (due to a fear that their confirmations, but inability to correct them might present additional constraints to one’s conduct of actions or reflections), initiating their historical reoccurrences. However, in a constructive concept of education, mistakes can be accepted as occasions for an investigation of the limits of one’s knowledge that may result in a widening of the contextual aspects thereof and penetrating into the levels of a richer informational organization. Creative forms of education are, therefore, built upon an inherent stimulation of flexible and open observations of investigated systems from diverse available perspectives.

Beside the fact that it can be noticed in each developing ecosystemic organization, the parallel development of flexibility and organizational diversity (manifested as increased sensitivity and skills) is naturally immanent in each one of our learning tasks. On one hand, the capability of learning on mistakes is generally proportional to the inherent versatility of the given cognitive system. On the other hand, the importance of stimulating flexibility towards reviewing and modifying the foundations of our reasoning (that take the form of various initial assumptions, prejudices and desires) at the individual level, and cultivating diversity of worldviews at the social level by invoking individual reflections and self-guided patterns of reasoning instead of the standardized responses, also emerges as a pathway for the further development of emerging qualities of humanity. Or as Chuang-tzu noticed, ‘People celebrate what lies in the sphere of their knowledge, but ignore their dependence on what lies beyond... Hundreds of doctrines march forward and forward, thus condemned never to unite’⁸². However, such an approach of a free and open reviewing of our own foundations of existence and thinking is possible only through acknowledging inherent instabilities, interdependencies and fragile grounds of faith and belief as the bases of our reasoning.

‘Ecology is the whole system, but co-evolution is the whole system in time. Its health is prosperous – systemic self-education which feeds upon perpetual imperfections. Ecology sustains. Co-evolution learns’, was the opinion of Stewart Brand, whereas Kevin Kelly thought that ‘a mistake, either accidental or purposeful, must become an integral part of each process of creation. Evolution can be imagined as a systemic management of mistakes’⁸³. With such an approach of accepting uncertainties and mistakes as inherent in every act of creation, an educational attitude oriented towards the augmentation of flexibilities becomes cultivated, thereby sustaining the potential of adaptivity, ethical awareness and aesthetical receptiveness, all being the features that enable a constructive development and a co-evolution of living systems in the context of their environment. The functional differentiation of communities presents a natural way to facilitate the transcension of mistakes and situations in which ‘the things are not going our ways’, provided that flexibility of the organization becomes simultaneously developed as

well. That is why the doors to mutual prosperity become open not through an infliction of fixed reasoning procedures and conceptual worldviews, but through an instigation of independent arrivals at the common guidelines and thinking patterns. Or as Lao-tzu noted: 'Nothing in the world is as soft and yielding as water, yet nothing can better overcome the hard and strong. The soft overcomes the hard, the yielding overcomes the strong; every person knows this, but no one attunes his behavior accordingly... Who accepts upon oneself the sins of the world will become the king of the world' (Tao-te-ching LXXVIII). Learning directives that originate from the roots of the silent language of empathy and care may, therefore, present the subtle force that animates the wheels of the contemporary evolution of life.

Finding a harmonious balance between an increased diversity (directly related to an increased sensitivity of cognitive systems, being the result of an efficient learning) and an enriched contextual unity presents a significant task for any constructive learning, i.e., learning that does not lead to the establishment of firm, fixed and exclusive conclusions, but fosters flexibility of ceaseless revisions and through opening novel perspectives and options maximizes the potential of attaining sustainable and yet evolutionary cycles of learning. The creative knowledge may be, in fact, regarded as based on the balance between 'know-how' knowledge of the mechanistic and programmatic character, and 'know-why' knowledge related to the contextual character of interpretation of the importance of this very knowledge and the subsequent creative conduct of learning processes. The contemporary neglect of the concept of meta-learning - i.e., learning about learning and developing knowledge on the context of knowledge - in the framework of the mainstream education often leads to an undesirable relinquishment of individual responsibilities (and consequently of the inner sense of freedom, which can be defined as the sense of responsibility for our responsibilities⁸⁴) through an imposition of autocratic, submissive and unquestioning 'rules of the game', which silently produces numerous troubling paradoxes of the modern society, including the frequently preprogrammed, unimaginative conduct of scientific research, non-empathic biomedical therapeutics, nihilistic arts, manipulative, exclusive and conditional religions, anti-cosmopolitan and narrowly centered political parties, and education permeated with a lack of mutual learning, interdependent inquiry and the thirst for knowledge. However, in such a problematic circular chain of causes and effects, education presents both the beginning and the end point, and the foundations, means and aims of a sustainable and harmonious development of any human society. In that sense, we may reasonably ask how basic today's basic education in fact is? Albeit the fact that it provides a convenient support for versatile professional tasks, numerous implicit assumptions and prejudices frequently remain hidden and unacknowledged during the official hours of education. If introduced as a more basic form of education, the study of systemic reasoning that deals with characteristics, qualities and types of relationships typical for all natural systems, might prove to be surprisingly beneficial for the guidance of both creative individual reflections in problem-solving attempts and a harmonious conduct of activities within various social domains, including professional, ethical, aesthetical, economic and ecological aspects of living. Someday, although, human race may realize that even more basic foundations of education ought to be introduced, and that in the form of ethical values, imaginative vigor and spiritual zeal. Such Christian foundations of education may certainly become affirmed as the firmest basis for all the subsequent professional orientations.

Despite the fact that every learning occurs upon mistakes, explicit descriptions of one's works or answers as incorrect, without ever bringing about good sides of the work done, presents an approach that may prove as devastating for the student's motivation. Such an approach may

even more instigate the contemporary way of thinking and expressing where mistakes and uncertainties are practically forbidden, even though beautiful and wise expressions and attitudes necessarily comprise them. Instead of assertions of incorrectness of students' performances, the approaches related to presentation of situations where routine logical sequences of habitual reasoning fail and thus offer implicit invitations to revise the very foundations of thinking, may present more successful ones⁸⁵. Numerous benefits of today's advanced educational attitudes, according to which instead of forcing the students to distantly observe creative performances of others and follow the traces of someone else's problem-solving searches, they become invited to actively participate in seeking solutions to the actual problems of the society (so that their senses for responsibility, as the foundations and aims of a creative education, become exercised as well) and faced with enigmas and puzzles that they need to individually clarify and solve, may be illuminated from the proposed perspective wherefrom all forms of learning and advancement are seen as preceded by the struggling attempts to solve and 'reconnect' the encountered non-coherences and discrepancies. By knowing so, an emphasis placed on the attainment of external aims and reaching the satisfaction 'rewards' in the objectivistic tradition may need to be transformed to teaching aspirations that invoke an inner drawing of the inherent potentials of the beings (which is what Latin *educare* originally meant), their individual reflections and switching of the references of their responsibility senses from the higher authorities to their own inner sources, turning the worldly 'prizes' into inner, spiritual and Godly 'praises'. Whereby negating the relevancy of the individual child's reflections paves the way for the autocratic shifts of responsibility, manipulating or submissive tendencies and a resistance towards learning and constructive collaboration, the investment of fidelity and trust spontaneously initiate the child's openness to novel perspectives and conducting pathways, and the blossoming of the senses of responsibility that present the keys to a successful self-guidance of inherent creativities. Because it instills values, stimulates imagination, benevolence, and responsibility towards our aspirations and freedoms⁸⁶, the creative education radiates with harmony between awakening a wondering inquiry and deep senses of responsibility, whereupon our roads to development become permeated with turning backwards every now and then and cautiously revising the very aspirations, values and methodologies that stand at the foundations of our journeys.

Whereas the objectivistic ideals of education are related to manipulative modifications of others through controlling their environments (i.e., through requirements, expectations, forced situations and a reduction in the freedom of choice), the creative education is based on the fact that 'evolution and learning cannot be imported without the export of control', evidenced in the case of artificially intelligent systems⁸³. Such an approach may have already been noticed in the 'doctrine without doctrines' of Lao-tzu's philosophy: 'An intelligent control appears like a non-control or freedom, and it is therefore the genuine control; an unintelligent control seems like an external dominion, and so it is indeed an unintelligent control' (Tao-te-ching XXXVIII). However, the balance between constraints and the freedom of choice typifies all caring, loving and warmhearted relationships in Nature, including the proposed metaphysical aspect of the co-creational nature of experiences. 'Our life, like a river, strikes its banks not to find itself closed in by them, but to realize anew every moment that it has its unending opening towards the sea. It is a poem that strikes its metre at every step not to be silenced by its rigid regulations, but to give expression every moment to the inner freedom of its harmony...Beauty harmonises in itself the limit and the beyond, the law and the liberty'⁶¹, are the words of Rabindranath Tagore, which clarify the meaning and benevolent purpose of a constrained behavior in relation to the mutual evolution of either individual beings in the social context or mind and Nature in the course of the

co-creational development of experiential worlds. The development of characteristic and socially fruitful patterns of reflection within human cognitive spheres is conditioned by their inclusion in the social tradition of exchange of deeds, actions, ideas and all other meaningful signs and creative directives in the course of the mutual coordination of experiences, which presents an idea reflected at the original root of the word ‘cognition’: *con-scire*, i.e., something that becomes known in togetherness. Similar to linguistic constructions and scientific expressions, each cognitive phenomenon possesses its meaning only in the context of social communication and sharing of knowledge. ‘Learning is transformation of actions in the process of performance of actions together with others’⁸⁴, has been, thereupon, Humberto Maturana’s definition of learning, in accordance with Heinz von Foerster’s simple and yet an intricately wise observation: ‘Human being is the human being together with another human being; that is what a human being is’⁴¹.

Knowledge comprising an awareness of the co-creative nature of experiences, the comparative character of the observed qualities and mind reflections, and the co-orientational character of all human communicational tools, ranging from science and religions to arts and common languages, may present the tracks upon which the creative train of thoughts of the mentioned lone ‘sea stars’, once air-drawn, reclusive and deeply pondering upon the order of life and Universe, joyfully and marvelously returns to the human societies. As in the case of Jesus Christ, Gautama Buddha and many other sacred voyagers that once lonely roamed upon the face of this planet, but have returned to deliver sacred messages and re-harmonize the actual dissonances within human and ecosystemic organizations, the moments of crisis, confusion and sad and empty looking in the distance may indeed present the necessary steps in the educational reaching of enlightened states of knowledge that will be proven as substantial and irreplaceable for the overall organization of human life one day. Through such a niche, one eventually agrees with the guiding lines of St. Paul the Apostle, according to which one should ‘boast not against the branches; but if thou boast, thou bearest not the root, but the root thee’ (Romans 11:18), and through a correspondingly awakened responsibility continues to refine the branches of the human tree of knowledge, inducing further exponential growth of options for both the informational development of human experiences and the spiritual evolution of human beings.

8. Cosmological parallel of learning on mistakes

‘Suppose ye that I am come to give peace on earth? I tell you, Nay; but rather division’
Luke 12:51

‘O Arjuna, confident of success, rise up and fight’
Bhagavad-Gita 2:37

Looking back to the actual history of the Earth and drawing the line to where we stand now, a continual trend of the exponential growth in the informational content of the planet^{87,88} and the fractal multiplication of the complex patterns of the Universe at the local, planetary scale may easily be evidenced. However, in parallel with the evolutionary growth in the natural complexity, wondering potential and cognitive sensibilities, the repertoire of potential mistakes that present the potential drives for the future informational and spiritual advancements branches too. Therefore, instead of the rejection and removal of mistakes, uncertainties and the fields of unknown from our expressions and conceptual worldviews, the ideals of a continual advancement of human societies and the corresponding cognitive and environmental landscapes

imply that these mistakes ought to be accepted as the reasons and objects of research, refinement and development of the conceptual frameworks used as representations of diverse aspects of natural processes⁷. The tendencies to communicate without any flaws or inherent mistakes can often lead to a decreased informational content comparing to communications enriched with the element of spontaneity and sincerity. In fact, one of the biggest challenges for the modern ethical behavior may be how to act perfectly through imperfections and how to be certain in uncertainties. ‘The ultimate perfection is like imperfection. The highest affluence is like the poverty. The straightest road looks like a blind alley. The biggest art seems like clumsiness. The highest eloquence sounds like stammering’ (Tao-te-ching XLV), Lao-tzu correspondingly kept in mind. Similar to the tightrope walker’s walk during which he advances forward only through stepping out of the sterile states of the perfect static balance and alternately falling to opposite extremes, the representation of life and evolution in terms of dynamic balances can yield the same idea: namely, that only through perpetual searches for balances of the polarities whose end sides merge with each other (as in the celebrated Tai-chi-tu diagram) do options for the evolution and successful learning become increased. The knowledge of an inherent and inevitable existence of uncertainties and mistakes - instead of aiming for final, perfectly consistent and complete solutions – in all cognitive and evolutionary aspects, in fact, supports the idea of the endless evolution of life and perpetual cognitive sprouting, and *vice versa*. The secret of perfect harmonies is, so to say, that there are no perfect harmonies. In musical terms, if anyone aspires to build a perfectly tuned twelve-tone scale instrument, he may need to know that the twelfth root of number two, as corresponding to the ratio of frequencies between the adjacent tones on such a scale, is an irrational number, with the decimal digits thereof extending towards infinity.

A few examples can be provided in support of the idea that advancements of human societies in parallel produce beneficial novelties and potentials for mistakes. First of all, similar to linguistic directives applied to overcome inherent or potential mistakes in the mutual coordination of experiences, all creative ‘forces’ within social communicational networks become stimulated by observations of disharmonies, irregularities and incompatibilities in natural, social and cognitive organizations. Scientific and technological innovations aimed at solving certain problems within human societies have been in their wake regularly producing novel problems - such as the exorbitant population growth, the planetary warming, the extinction of life forms and a decreasing genetic diversity of life, an enormous waste production and the loss of ecosystemic and economico-political planetary balances, adverse medical consequences of anti-bacterial fights in the developed world, and the spontaneous propagation of values that drastically differ from religious and traditional ethical and aesthetical norms - that will, hopefully, present sources for further flows in the evolution of knowledge. Scientific and technological inventions that enable the production and sharing of ethically and spiritually inspiring deeds and values can be also used for spreading hate, destructiveness and disharmony. The contemporary senses of alienation, loneliness and disconsolation seem to become even further instigated in the world that relies on the use of massive telecommunication networks and media. It can be induced from the history of humanity that some of the most conceptually beneficial ideas, including Christianity, communism, industrialism and globalization, have led upon their implementation to some of the most disastrous historical events. On the other hand, Orson Welles noticed that ‘in Italy, for 30 years under the Borgias, they had warfare, terror, murder, bloodshed, but they produced Michelangelo, Leonardo da Vinci, and the Renaissance. In Switzerland they had brotherly love, they had 500 years of democracy and peace, and what did that produce? The cuckoo clock’. The same history of human race can provide us with many

examples on how poverties and shortages of certain resources can present the reasons for either harmonious and mutually viable cooperation or violent conflicts. Informational evolution has, in accordance with both Heraclitus' idea that 'the road up and the road down are one and the same' and the ancient Buddhist saying that 'every man is given the key to the gates of heaven; the same key opens the gates of hell', so far produced an expansion of the sample space for both prosperous and degrading effects and influences of the communication media that the living beings are nowadays immersed into. Mental reflections – as the fruits of the tree of knowledge from the Garden of Eden¹³ – have endowed humans with abilities to observe the very processes of perceptual observation, and have correspondingly paved the way for both the incredible works of sciences, arts and philosophy, and the self-conscious egotism and desperate feelings derived from experiencing existence in the framework of an inexorable passage of time and other 'dead end' limiting concepts self-imposed by mind reflections, routinely used for managing 'raw' experiential data. Although conceptual generalizations have presented ordinary steps in the refinement of scientific knowledge and *a priori* experiential ordering, they have contributed to numerous oversimplified ideas and ignorant attitudes of humanity whenever their metaphorical and pragmatic meanings have been lost in favor of their truthful identification as representations of an objective and universal reality. Whereas the constructivist approach to organization of knowledge solves some of the problems inherent in the objectivistic tradition of scientific and common linguistic descriptions, it comprises an inherent potential for anarchistic, disordering and sterile encounters of versatile, but mutually incomprehensible and incommensurable worldviews. The constructivist ethical norms of expression, according to which the subject tends to be explicitly present within the proposed ideas (in order to signify the influence of the observer on the observed phenomena and returns responsibility - that was previously erased in the objectivistic tradition of describing the world - into the observer's domain), can lead to their understanding as egotistic and tradition-detached approaches from slightly different angles. All the great philosophical, scientific and religious systems of knowledge can be interpreted in form of either optimistic and grandiose, or pessimistic and desperate, depending on the personal approach to comprehension of their inherent metaphors as reflections of the processes that outline the evolution of natural systems. Linguistic constructions are, as a matter of fact, always interpreted in reference to subjective experiences, which implies that even some beautiful metaphorical messages (such as religious stories) may acquire thoroughly opposite meanings depending on the interpretational assumptions employed in the course of their understanding. Language presents a pragmatic tool for the mutual co-organization of experiences, but also a means to expression and implicit cultivation of arrogant attitudes, cognitive insensitivities and ignorant judgments whenever its constructs either instead of being 'good servants' become 'bad masters' in the context of the experiential coordination (i.e., when a profound awareness of the metaphorical character of language as a set of pragmatic 'maps' of the experiential 'territories' cedes its place to a deceptive identification of linguistic representations as 'truthful' depictions of ontological 'territories'), or become applied independently of benevolent inner aspirations to mutually coordinate experiences of self and others by their means.

The more human mind becomes oriented towards a pragmatic creation, aims and purposeful effects, the more it attaches the concept of utility to the meaning of the existence, whereby an introduction of such purposeful conditioning at the core of interpretational contexts of human reasoning may consequently lead to a diminished genuine meaning that the beings ascribe to the existence and a gradual rusting of essential human values, in accordance with the observation that artificial lights may help us find the way in the darkness, although they dim the

wonderful and inspiring grace of the night starry sky. Although the oxygen that we breathe promotes the burning of carbohydrates, which supplies the biochemical energy and drives the majority of negentropic processes within the organism, the same oxidative metabolic processes lead to the formation of free-radical molecules that tend to act against the structural integrity of the organism. Such an observation is consistent both with the famous Paracelsus' maxim that 'poison is the dose', and with the systemic concept of the contextual definition of qualities of natural systems, according to which an interaction with identical natural entities may result in harmful effects in one and in beneficial effects in some other contexts. It may also be noticed that although planetary oceans present more viable living environments in comparison with the land (due to a more uniform distribution of the sea water and the nutrients it carries, narrower temperature variations, weaker effects of the radiation from the Sun and less energetic three-dimensional movements, comparing to inconsistent rain effects and other climate features of continental landscapes), life forms have at certain point in their evolution moved to the land, which has been harder for moving and pervaded with the dangers of droughts, fire, snow and floods. Even though the land comprises approximately one-third of the planetary surface, it is nowadays home to more than a half of the actual biota⁸⁹.

And in general, the planetary organization of life has been arisen and developing towards ever negentropically richer states in the limiting conditions of the laws of thermodynamics, according to which the disorder within every closed system, such as the Universe presumably is, continually grows and all inherent processes inevitably aim to reach the thermodynamic equilibrium that corresponds to immersing the diversity of the living patterns into eternal monotonies and uniformities. The very laws of thermodynamics may be, in fact, invoked in order to explain such a balance between benefits and mistakes, i.e., desired and undesired outcomes of all creative acts. Formation of order at one place is, namely, possible only at the account of increasing disorder in some other areas of the thermodynamically closed system. Accordingly, every form of natural creation, from the domains of chemical reactions to scientific descriptions to cosmological schemes of interactions, inevitably produces polarities, so that any investment in human production results not only in the formation of desired products, but in the appearance of waste by-products as well. On the other hand, it is known that whereby low-risk investments lead to a short-term, incremental prosperity of knowledge and its applications, devotions to fundamental, so-called 'blue sky' research⁹⁰ - that has, nevertheless, been shown in cases of quantum mechanics, molecular biology and cybernetics to produce fruitful outcomes far beyond the horizons of their immediate significance, owing to their fundamental meaning - correspond to high-risk investments⁹¹ and as such remind us that the amplitudes of risks and benefits are similar to an object and its mirror reflection in every creative act. We have seen in Section 2 how only stress and tension (and recall that every emotion, thought or autopoietic structure comprises subtle patterns of stressed and relaxed domains, comparable to musical harmonies) can yield informationally more diverse system states starting from the simpler ones, whereas the relation between the alternate states of dissonant stress and consonant relaxation that give rise to a delightful cosmic music of creation and harmony between epistemological and ontological co-creative sides in the development of experiential worlds has been established in Section 4. Eliminating the effects of stress, undesired separateness or any other deviations from our expectations and ideals would, therefore, settle down the wonderful music of life that gives rise to the parallel spiritual and informational evolution of living matter. Consequently, each evolution is conditioned by the existence of mistakes, whereas instead of the ideals of reinforcement and propagation of individual poles of interactions discerned from the

experiential/natural order by means of our active reflections and actions, every form of an ultimate philosophy ought to be based on the observation and promotion of balances and Middle Ways. The essential questions and mysteries of life, therefore, present reflective patterns that lead to the enlightenment and beautification of the life qualities via not reaching their final solutions and bringing human inquiry and creativity into sterile and static equilibriums, but overgrowing them^{31,92,93} and enriching their seemingly paradoxical, but in fact mutually supporting and accentuating, dynamic polarity balances.

The contemporary ‘mistakes’ in form of sprawling insatiability, jealousy, egotism and greed as the drives that stir economic cycles, an exceptional valuing of forms at the account of the ignorance of processes, and the insensitivities towards correlations between the foundations of our thoughts, ideas and aspirations on one side and the appearance of our experiential worlds on the other, may present only the signs of actual global bifurcations that are about to open the pathways to a spontaneous emergence of novel holistic (so-called ‘inner’) qualities and correspondingly lead the human culture towards advanced evolutionary stages. The immune systems of complex organisms have evolved and are maintained through routine ‘attacks’ by foreign bodies, whereby computer viruses have similarly not caused the destruction of computer networks and media, but have through a wide distribution of the prerequisite knowledge induced a continual advancement in the computational safety features⁹⁴. Lao-tzu correspondingly noticed that ‘the one following the straight path of Tao seems like ascending and descending’ (Tao-te-ching XLI). Every road of evolution and development must be accordingly interspersed with the puzzling and enigmatic problem-solving attitudes. What seems as a straight and narrow line of progress from global perspectives might be discerned as a wide and multidimensional area permeated with alternate moments of problematic retardations and vigorous soaring from the local ones.

Metaphysical foundations of the polar organization of natural order can be generally outlined from the perspective of the co-creational nature of experiential origins. As a matter of fact, the proposition that human ‘external’ deeds cannot be considered independently of the human intentions that produced them naturally provides numerous beneficial conclusions, which might help in restoring the enlightening sense of responsibility for the state of one’s experiential world at each and every existential moment in the reference ‘heart’ of the subject’s experiential observations. In other words, the potentials of explication of an ever richer interplay between human souls and Nature in their co-creational dance through which all the elements of their experiential worlds are formed become increased in the context of the evolution of life and the corresponding enrichment of the informational planetary content, although the effects impressed on the cognitive foundations of individual experiential worlds might forever be dependent on the spiritual quality of the interaction between the deepest epistemological assumptions, intentions and aspirations of the subject beings on one co-creational side and the divine teaching force of the ‘hidden’ ontological reality on the other. There might be no ultimate scientific and technological discoveries that will free the living beings from the genuine questioning and departures to the sacred quests of exploration of the missing ‘religious’ links between their fundamental ethico-aesthetical stances and implicitly cultivated values on one side and the principles that underlie the evolution of their experiential worlds on the other. The correlation between one’s cognitive foundations and the states of the world of one’s experience, including the ‘teaching voice of God’ dormant in its every minor detail, may remain the ultimate mystery of life and the ‘golden key’ to the spiritual evolution of human consciousness towards ever richer and enlightened cognitive spheres. In order to be so, life must remain a battle between shadows

and light, wherein one might be endowed with the knowledge that beauty and the significance of 'lights' are directly dependent on the strength and power of their 'shadows'. The evolutionary awakening of the enlightening goodness and love through eons of competitive ecological interactions and the struggle for survival, and the recent game theory model which has presented how the optimal way for the emanation of goodness and love in Nature would be necessarily paved with hardship and misery⁹⁵, may serve as evidence for such a thesis.

Socrates described the essence of human beings through the figure of a charioteer that drives a pair of horses - one noble and the other ignoble⁶², resembling the old native American allegory of an incessant combat between a white wolf and a black wolf within our beings. When an Indian child asked a Cherokee tribe chief about who eventually wins the battle, the chief replied: 'The one that you feed', whereby he forgot to add that the white wolf is necessarily so good that it would always share its portion of food with the black wolf. In the end, its innate goodness and mercifulness will be redeemed, because only through the constant battles, reflections and rebounds from its opposite 'blackness' is that the 'whiteness' of the white wolf can sustain and flourish in its dynamic development. When asked by one of his disciples whether he will go to Heaven or Hell, Zen master Joshu replied: 'To Hell; who would otherwise go save the lost beings?'⁹⁶, whereby St. Peter, while running away from Rome where he was sought to be crucified, saw the Lord at Via Appia, and asked him an unforgettable question: '*Quo Vadis Domine?*', upon which the Lord replied: 'To Rome, to be crucified again', slightly disgracing St. Peter and making him proudly return to the place of his final agonies. And the Apostolic words of St. Paul that 'the Christ died for us' (Thessalonians I 5:10, Corinthians II 5:15) do not invite us to exhibit recklessness and renunciation of self-responsibilities and the adventurous quests for knowledge, but quite opposite: to perpetually keep an 'eye' on human misery depicted by the image of the crucified Christ, so that the other 'eye' of ours as the symbol of light, serene and heavenly creative forces of our beings may become realized in form of a deep appreciation of peacefulness, kindness and gentle grace as both the ultimate aims and foundations of human actions. Otherwise, one may become successively encountered with the recurring light/darkness polarities of the natural order - manifested as repeating problematic, disharmonious and erroneously managed situations - as long as one does not learn upon them and correspondingly evolve. The framework of the systems science may point us to the idea that the precondition for the existence of 'something' is the existence of 'nothing'⁹⁷, whereby the beauty of music and twinkling stars is similarly conditioned by the moments of silence⁹⁸ and dark interstellar spaces between. Maybe because it is being forgotten that the doors for the evolutionary advancement are open only where goodness, beauty, meaning, order and harmony become respectively reflected from evilness, vulgarity, sensual emptiness, insanity and noise, and humans are frequently turning away from miseries, desperations and hardships of the world, is that so many reasons for sadness and concern nowadays exist.

As the setting Sun always presents the Sun in its rise to someone else and *vice versa*, the whole world may be seen as a place of an evolutionary confrontation of diverse human aspirations that, simply classified, either tend to do evil, but like Faustian forces^{99,100} they end up doing good, or tend to do good but in the wake of their actions they eventually also produce some sad effects, similar to an artist who by choosing to write down lovely and inspiring poems that may be praised by the human society neglects a sad flower on his window that will wither without his attention or *vice versa*. 'The systems approach can stand firmly only against its essential opposition'²⁸, Charles West Churchman wrote, pointing to the necessity of confronting one's attitudes and reasons with their essential opposites as the way of their deepening and

strengthening. But coupled with apprehending the metaphorical character of language, these conflicts of opinion may not necessarily be identified as attacks to our biological or cognitive sovereignty. In fact, they may be regarded as only pragmatic dialectical encounters upon the canvas where the schemes of our knowledge are being drawn, and which as a sort of a flag, unattached wave in front of the pure, meditative and heavenly clean mind of our being. Just as we know that the Sun and the stars are always present behind the clouds, unveiling the pure ‘territories’ of mind (that comprise the ingrained learned values) by raising the conceptual ‘maps’ of our thinking to separate the levels that enable their pragmatic dialectical manifestation with bringing into oblivion their potential harmfulness, forms, so to say, a cognitive aureole that corresponds to the Buddhist ideal of nonattachment, and sanctifies our being, providing us with the possibilities to attain the ideal of harmony between pragmatic action and meditation, as well as a long-sought equilibrium between pragmatic reductionist conceptualizations and an underlying attitude of holistic and spiritual unison.

9. Conclusions

The Parable of the Lost Son

Luke 15:11-32

‘Her sins, which are many, are forgiven; for she loved much: To whom little is forgiven, the same loveth little’

Luke 7:47

The major point of this chapter may be comprised in the idea that both the planetary evolution and learning phenomena inevitably occur through creative and clarifying surmounts of encountered mistakes in terms of: a) implicit cognitive misconceptions and erroneous patterns of reasoning; b) the corresponding being/environment interactional ignorance; and c) attempts to guess the universal face of the mystical obscurities drawn behind the veil of one’s experiential reality. Diverse points of view, including an analysis of elementary cognitive and learning experiences, the evolutionary history, and the aspects of philosophies of language, science and ethics, were invoked in attempts to construct the evidential support for this thesis. By referring to a few narratives and allegorical quotes in the course of this chapter, educational ‘guiding stars’ as emanating from the acknowledgement of the all-encompassing metaphorical nature of knowledge were sketched. Most significantly, an introduction of narratives and analogies intended to stimulate individual arrivals to conclusions that are never explicitly shown, but only implicitly pointed to, is proposed as the most beautiful way of teaching. Consequently, this chapter may end with a story from Mundaka Upanishad¹⁰¹. According to it, two birds lived on the same tree. Whereby one of them inhabited its leafy inner branches, leaping among them and consuming many of the tree’s fruits, both bitter and sweet, the other bird solemnly stood on the tree’s highest branches, peacefully radiating with its inner cognitive harmonies. Whenever the first, inquiring bird tasted some of the bitter and sour fruits of life, it would repentantly look towards the solemn bird above. At the end of the story, after many such bitter moments of learning through mistakes, the leaping bird realizes that she has, in fact, always been the graceful bird, whereas all of the tree’s fruits have been there in order to carve the cognitive shores of our beings for the flow of the river of spiritual evolving within.

We have seen that language, like any other communicational endeavor, including science, arts and philosophies, cannot be considered as a tool for a truthful representation of an objective

reality, but presents a set of interwoven metaphorical patterns applied in overcoming potential mistakes and implicit misunderstandings within the mutual coordination of human experiences. The actual gap between individual, exclusive affinities for either scientific or religious studies produces a damaging disparity between human actions and the ‘silently’ guiding values implicit in them, and might be elegantly bridged by acknowledging the same, not truth-finding oriented, objectivistic and universal, but metaphoric, pragmatic and experientially co-orientational roots of both science and religion. On the other hand, we have seen that not only these communicational tools, but evolutionary epistemological bases of experiential co-creations, reflective thoughts and spiritual values are similarly developed on continual encounters with mistakes and deviations from expectations, and overcoming of the latter by means of evolving into higher and enriched foundations of knowledge. The co-orientational character of language, science, religion and arts correspondingly indicates that love, benevolence and care verily present the foundation of all knowledge, whereby on the other hand, mistakes, hardships, undesired circumstances and unanticipated effects of human actions go hand-in-hand with the ‘forging and tempering’ of essential human qualities. In the world freed of mistakes, perplexities, riddles, puzzles, mysteries and ‘crucifying’ dilemmas, all of the human qualities that act as drives of the wheels of the evolution of consciousness and life would slowly wither. In seeking the solutions to certain enigmas of life, we may never come to an end marked with final conclusions, ultimate theories of reality and perfectly balanced and optimal rules of reasoning and conduct. Simply saying, if we would be able to know for sure that either ‘Yes’ or ‘No’ presents the ultimate answer to the question of whether our devoted investigations of natural/experiential phenomena and the moments of altruistic hardship would indeed succeed in their benevolent mission and produce small but invaluable steps towards ‘saving the world’, the wheel of wonder that drives the evolution of consciousness and life would stop spinning, in the former situation due to invoked leisureliness and negligence, and in the latter case due to hopelessness and despair¹⁰². These questions, therefore, ought to be lived and evolved with carrying the bright visions of hope and faith in our hearts. ‘Don’t search for the answers, which could not be given to you now, because you would not be able to live them. The point is to live everything. Live the questions now, because then, someday far in the future, you will gradually, without even noticing it, evolve into their answers’¹⁰³, as Rainer Maria Rilke noted.

To conclude, on one hand without a contradictory, dialectical nature of evolution of understanding, cognition, spirit and life, the most profound human qualities, such as love, care and senses of wonder and beauty, would come to the point of their permanent vanishing. On the other hand, such a polar and dialectically confronting organization of natural order feeds a parallel evolution of the informational content and spiritual qualities that pervade the reality. Love may be, thereupon, realized as the eternal and all-pervasive force of the Universe that stands at the beginning and at the evolutionary end of life. Love and care present unapparent, secret and bosomed keys to the advancement of all forms of knowledge¹⁰⁴ and to the evolution that provides us with bright and endless horizons that may belong to nowadays unimaginably sensitive, spiritually devoted and cognitively sensitive beings. The origins of amazingly sensitive cognitive systems walking along future evolutionary trails will have been, hopefully, caused and followed by learning on ever subtler and finer mistakes. In that sense, ethical and cognitive guidelines that permeate the metaphors of profound religious scriptures may not only provide a ‘connecting’ complement to the virtues of ‘distinctive’, analytical reasoning, but may become evidenced as crucial in edifying the only stable foundations of knowledge - corresponding to the flexible Biblical soil that embraces the sown seeds gently and promotes their sprouting and

growth (Matthew 13:4-9) – from which sustainable and evolutionary actions and ideas may be born.

Stars as reminders of some distant seeds of life may support our optimistic visions that the evolution of life and spirit may indeed lead the living creatures to become similar starry sources of life for some novel childish beings that will slowly, step by step, learn on mistakes towards becoming the same stars themselves. All the natural/experiential details may present metaphors for our learning ascension to such spiritual treasures. A child that learns how to walk by stumbling, falling and standing up again, fertile soil sustained by the interplay of sunny joy and happiness, a cloudy melancholy and rainy sadness, the bright light of the Sun, our subtle ideal on the path of the spiritual evolution, or numerous other metaphors of glistening evolutionary paths may indeed as quite visions fly us on their wings there someday, and like the Kant's light dove¹⁰⁵, Simorgh-seeking birds from the beautiful Farid ad-Din Attar's poem¹⁰⁶, the repenting bird from Mundaka Upanishad, or Winnie-the-Pooh's lovely river¹⁰⁷, we may realize that we have always been here and 'there', been part of the river and the 'sea', been part of the human fragileness and God's light in the world.

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On the Relational Character of Mind and Nature

Abstract

In this chapter it is proposed that experiential qualities arise through an interplay between the subject’s constructivist creativity and the informational landscape of the ‘hidden’ reality. Traditionally divided, idealistic and realistic philosophical attitudes therefore become merged into a single worldview based on the concept of ‘co-creation’ of experiential qualities. The idea that only differences and changes present perceivable information is supported by a considerable amount of experimental evidence, whereas the reflections of the proposed relational character of cognition arising out of the structural interface that connects/separates the subject and its environment are discussed as appearing at various experiential levels of complexity. The role of human values in terms of anticipations and aspirations in the experiential co-creation is discussed, as well as the contextual nature of definition of natural/experiential qualities. The main flaws of both objectivistic and idealistic (including radically constructivist) standpoints are mentioned in the quest for their harmonious balance. Balances and harmonies between the various proposed directions of progress are, furthermore, suggested as the keys to sustainable and evolutionary management of natural systems. The idea that balances as essential goals of

sustainable management need to be of dynamic character, so that the balances between balances and imbalances present the ultimate balances in the relationship of a being with its environment, is also discoursed.

Introduction

‘The true love of all dancers is dancing’
Gary Zukav, *The Dancing Wu Li Masters*

The greatest achievements of human creativity, which have carried profound and enlightening philosophical and ethical messages ‘on their wings’, were inspired by perceptions of disharmonies in understanding and applying specific concepts for organization and coordination of human experiences, such as science, language, religion or arts. These perceptions usually stemmed from the epistemological pedestals of brilliant minds, patiently sculptured with gracious ideals, impeccable values and angelically bright visions of evolutionary harmony. The writing of this chapter has been, accordingly, in part inspired by the contemporary tendencies to neglect relationships and balances as basic references in explanations of natural/experiential phenomena, and to rely instead on fixed, unilateral and ‘phlogistonic’ principles, typically proposed as valid irrespective of the interactional contexts in question. Instead of emphasizing an all-encompassing importance of balances, many of the proposed decisions, models and guiding principles nowadays belong to single-sided solutions that although occasionally may bring the balance back into disharmonized systems, in the long run would swing the modeled interaction into the opposite unbalanced state, and as such could not present the long-term solutions for the reigning problems of the contemporary mindsets and societies. Instead of the old-fashioned single-variable models and maximization ideals, dynamic balances and optimizations, altogether with the proposed symbolism of the Way will in the course of this chapter be presented as more promising metaphors for describing and interfering with natural phenomena at various complexity scales.

In accordance with the proposed relational character of all experiential and natural phenomena, represented by the metaphor of the Way, neither the thoughts expressed herein pretend to deliver final solutions to the enigmas that concern human relationships with Nature. The purpose of their invoking is only to widen the domain of our inquiry and deepen the intricacy of the new flows of inspiring questioning. As all linguistic expressions could be in accordance with their metaphorical nature regarded as pointers to specific human experiences, the purpose of the ideas proposed herein is, in part, to point to the very pointing. For, the flow of this chapter does not tend to indicate only the importance of the aims of our journeys and explorations, but to equally point to journeys and ways as the aims in themselves. Simply saying, if our desire is to learn dancing, the aims inherent in the very act of dancing need to be acknowledged. However, in order to avoid the solipsistic and existentialist cognitive ‘whirlpools’ dormant in such an attitude of sole ‘pointing to very pointing’, a complementary aspect of experiential phenomena, related to realistic sharing of common experiences and ‘dancing with others’, as well as cultivating bright visions of ‘final causes’ and simultaneous pointing to various ‘sun-rising’ horizons that the beings of the world yearn to meet on their evolutionary paths, will be invoked in the context of our search for idealistic/realistic balances at the foundations of human reasoning and being.

Part I. The Basic Teaching

‘A way that can be denoted is not Tao, the all-pervading way.
A name that can be proposed is not the real, eternal name’
Lao-tzu, *Tao-te-ching I*

What are qualities?

‘When one goes forth a-voyaging, he has a tale to tell’
Arthur Schopenhauer, *The Wisdom of Life*

The first steps towards amazing scientific discoveries and enlightening ideas are marked with the moments of wondering over miraculously ordered networks of relationships that pervade seemingly random and unpredictable patterns of our experiential worlds, and *vice versa*. ‘What are qualities?’ is the question that may naturally outline in us the wondering cognitive basis for fruitful stepping on the genuine way of exploring the questions of origin and nature of our experiential realities. However, ‘quality’ presents a term that may evoke various different connotations. Whereas in the domain of social sciences and common conversations it may denote durability, consumer satisfaction or usage feasibility, in the domain of natural sciences and philosophies it denotes elementary features ascribed to natural entities. Every cognitive moment can be essentially described as a segment of a continuous experience of qualities, subjectively assimilated within meaningful perceptive and interpretational wholes, such as objects or beings.

If one consults the traditional philosophy of science in attempts to unravel the mystery of origin and nature of experiential qualities, he would most probably be redirected to the empiric categorization of qualities, proposed in the 17th century by John Locke. According to this categorization, all experiential qualities might be divided to primary and secondary ones. Whereas primary qualities are indicated as independent of the observational perspective and consequently subject to measurements and mathematical representations, secondary qualities are proposed as subjective and incommensurable among different observational perspectives. For example, aesthetic forms discovered in the shape, color, smell, texture and the humming sound of a seashell would present ‘its’ secondary qualities, whereas its inner structural features (i.e., atomic composition and ordering) would correspond to ‘its’ primary qualities. Both standard empiricism and the philosophical background of the modern science are, in most circumstances, based on a common opinion that cognitive beings are actively included only in the definition of secondary experiential qualities, whereas the primary ones are considered as existing independently of human observers. Such an assumption is directly related to the concept of objectivity, according to which the natural world leaves impressions on human cognitive substrates independently of their will, interpretational and perceptive assumptions, and phenomenological intentions. Curiously enough, this proposition is compatible with the Platonic conception of the existence of ideas not derived from experience, which may be particularly entertaining in view of the origins of the former idea at the core of the philosophical school of empiricism¹.

Secondary qualities are, however, considered either as epiphenomenal or emergent. Whereas primary qualities would correspond to the ones entirely caused by the complex interplay of primary qualities at lower organizational levels of the concerned systems, secondary qualities would be only conditioned by the latter interplay. Also, whereas epiphenomenal qualities are postulated as unable to cause modifications at the organizational level governed by primary qualities, emergent qualities are hypothesized as able to do so, and as such present an

essential qualitative aspect of holistic approaches to the explanation of natural phenomena. Due to a distinct subjective character of their definition, secondary qualities are, in general, insusceptible to descriptions that involve fixed, objective and observer-independent criteria.

However, George Berkeley, another empirical philosopher, extended Locke's ideas and arrived to the conclusion that all natural relationships are *de facto* experientially observed relations, and that the complete mathematical apparatus applied for representing and depicting natural qualities, including the primary ones as seemingly objective, can be derived from typical human patterns of abstract reflections. Simply saying, in place of every 'world', there may be only 'a world of one's experience'. The stream of experiential events does not uniquely predetermine, but simply 'invite' subjects to compose the raw perceptive impulses into recognizable perceptual wholes and their abstract representations. Despite the communicational norms of neutrality and objectivity, scientific re-presentations may be, therefore, regarded as inherently dependent on the experiential context of their origins and the corresponding semi-subjective re-interpretational character. Neither the very ideas of primary qualities arise through their hypothetic observer-independent impression upon the abstract substrates of human cognitive apparatuses, but become subjectively constructed through semi-autonomous comparisons of multiple (or at least two) experiential events. The ideas of causality, Cartesian coordinates and other mathematical and logical forms of representing the physical phenomena present human metaphoric inventions applied in the mutual coordination of experiences, with intentions of reflecting not observer-independent, natural order, but the evolution of the world of our experiences at various scales. In that sense, Henri Poincaré observed that 'the geometrical axioms are therefore neither synthetic *a priori* intuitions nor experimental facts. They are conventions. Our choice among all possible conventions is guided by experimental facts; but it remains free, and is only limited by the necessity of avoiding every contradiction, and thus it is that postulates may remain rigorously true even when the experimental laws which have determined their adoption are only approximate. In other words, the axioms of geometry are only definitions in disguise'². Albert Einstein similarly held the opinion that 'physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world... The object of all science, whether natural science or psychology, is to coordinate our experiences and to bring them into a logical system'¹.

The biological nature of cognitive and scientific phenomena indicates that the biophysical structure of the observer, altogether with its complete history of internal processes and of the structural coupling with the corresponding environment, determines the boundaries and qualities of the observed systems. The concepts of primary and secondary qualities present, therefore, merely semi-autonomously constructed metaphors in the domain of cognitive reflections. These inner processes of construction of perceptual wholes and ideas are based not on a passive detection of environmental incentives that uniquely determine the further processes of abstract experiential organization, but on a subjective absorption of perceptual impulses that appear in form of differences at the being/environment cognitive boundary and consequently impel the subjects to semi-autonomously (i.e., coupled with the environmental indications) construct meaningful wholes in concert with the interpretational capacities of the actual biological structures. The major difference between primary and secondary qualities, however, lies in a conceptually more stable and substantial, mathematically expressible (whereby mathematical operations were particularly designed so as to be independent of the perspective of their usage) and, thereupon, facilely transmittable character of primary qualities comparing to enormous conceptual complexity of the natural events abundant with emergent and epiphenomenal

secondary qualities, impossible to predict, stabilize and maintain meaningful under observer-independent representational rules.

Every quality is a way

‘Quality knows no boundaries’
Slogan of the modern era

Every quality from both idealistic and realistic standpoints presents a harmony of relations. To illustrate this statement, an inquiry over a pebble will provide a neat contemplation for the beginning of our journey. First of all, observation and definition of any natural qualities require an interaction between a measuring instrument (including the observer’s mind) and the observed system. If one observes that the pebble is firm, it does not mean that it is intrinsically firm, but only that it is stable upon applying a mechanical pressure onto its surface. The assignment of units to each physical quality proposed reflects such a relative nature of observation, definition and control of the physical qualities. In physics, hardness is defined in terms of pressure units, and as such is implicitly related to the humanly derived concepts of space, time and movement. However, it possesses a scientific and practical meaning only in relation to the hardness of other materials. In mineralogy, hardness is, therefore, measured on the Mohs scale where diamond is the hardest and talc is the softest mineral. Any attribute ascribed to experiential wholes similarly presents the result of comparisons with some preconceived referential norms. In addition, only a comparison of one measured quality (e.g. structural integrity) before and after the interaction with the measuring device can yield another quality of the system (e.g. firmness). Comparison between at least a pair of perspectives may be consequently regarded as the starting point for each scientific and philosophical thread of reasoning.

Even from an objectivistic standpoint, hardness needs to be represented in terms of atomic interactions that constitute the respective crystal structure and their subsequent interaction with a corresponding measuring instrument, wherein each quality may be, on the other hand, considered as arising through interactions between entities that may also be perceived as more subtle forms of relations, and so forth. Each system quality is, therefore, from a realistic point of view existent as a complex set of relations that intrinsically constitute the system and yet figure in the interaction between the system and its environment. From an idealistic point of view, each system quality would, however, correspond to a harmony of relations that extend between the system’s perceptual representation and the subject’s interpretational context. In the domain of scientific and linguistic descriptions, in general, system qualities are existent as the effects of comparisons of specific interactive paths spread between the observer and its environment. However, the thesis proposed in this work presents a postulation of an inseparable connectedness of realistic and idealistic aspects of experience. The products of human perception, thereupon, present tiny areas of intersection between the sets of ontological and epistemological relations that the observed systems and the observer, respectively, ‘spread around’. Whereby the former, ontological set corresponds to an infinite spectrum of relations through which the observed system extends its ‘essence’ towards the rest of the Universe, the latter, epistemological one corresponds to the observer’s ‘rays of attention’ in terms of interpretational foundations and epistemological tools through which he approaches the observation of the given system.

Whereas the ancient Greeks believed that eye throws light to the world and as such promotes the ability to see, the classical theories of vision have been based on the idea that

external photons activate light-sensitive sensory cells and initiate the propagation of directly corresponding signals from the optical nerve to the brain where an image of the viewed area is formed. These two concepts can be, however, merged into a single mechanism that might more faithfully explain the process of visual perception. The classical theories of passive sight, according to which eye may be represented as perfectly analogous to photo-camera, are today being increasingly replaced by the theories of proactive sight, which acknowledge a key role of the sensual dynamics in explaining the world as we see it. Such a conceptual conjunction corresponds to the proposed arising of cognitive information through the intersection of the sets of relationships between the ‘hidden ontological reality’ that constitutes the system and its relationship with the environment, and the ‘hidden epistemological foundations’ that comprise the core of attention that the observer pays to the observed system.

Many experiments have indicated that eye and all other sensory organs do not play a passive role of directly representing the patterns of light or of any other impulses that come from the being’s surrounding. Instead, they are actively included not only in the selection of the absorbed impulses, but in their reshaping and adaptation to the cognitive needs of the subject as well³. First of all, in accordance with Johannes Müller’s discovery that all neural signals that arrive at the brain are qualitatively equal⁴, sensory cells during perception code not ‘what’ (i.e., the physical nature of environmental agents that cause their reaction), but only ‘how much’⁵. Environmental stimuli, in addition, do not cause perturbations of operationally closed neural networks of cognitive systems until the sensitivity threshold of the given sensory unit gets exceeded. However, a zero response of visual receptors will exist under both weak and intensive illuminations (relative to the susceptibility of the receptor cells) for as long as a perceptual comparison does not become introduced in the visual field. Only the receptors that are in contact with the boundary – such as a variation in illumination or in the wavelength of light – will be able to produce a neural signal and initiate the formation of a visual representation of the given stimulation⁵. Saccadic or micronystagmic eye movements that during a visual observation continually shift the position of light-sensitive retina cells relative to the optical image present a consequence of such an ability of sensory organs to detect only differences as information⁶. Only the dynamic patterns of the environment can, therefore, cause sensory perturbations and initiate perceptual activities within the organism. Visual and any other sensory representations that comprise the content of one’s present experience, therefore, present not the results of passive impression of environmental patterns upon the empirical *tabula rasa* of one’s mind, but the products of perceptual processes through which a being internally constructs viable representations of the relations between itself and the corresponding environment.

The processes of interpretation and compression of the ‘perceived’ data begin already at the processing level of the optical nerve, so that the information that arrives at the brain is redundant in certain extent and, therefore, partly ‘interpreted’ as such⁷. The imperceptible ‘blind spot’ appearing at the position where the optical nerve protrudes retina and analogously indicates that in other experiential aspects we may similarly not see that we do not see. It can be referred to as one of the crucial examples in favor of the inclusion of the subjectively constructive experiential features within all comprehensive models of perception and cognition. Consciously guided shifts of attention between the perceptible elements within one’s visual field present another subjective factor in the construction of individual perceptual experiences.

Experienced telescopists and microscopists are aware that the results of their measurements present complex, higher-order intersections between the ‘real’ (although invisible as such) observed processes and the aperture settings, so that the features of the measuring

instrument must be included in the description of each experimental result. Likewise, the products of our perception present complex outcomes of the interplay between the properties of us as biological, cognitive and social tradition-influenced observers and of the 'real' observed systems. Consequently, everything characterized as a quality in the world of one's experience needs to be implicitly regarded as a way wherein the subject's cognitive foundations (defined by the subject's intrinsic physical structure) present one 'co-creational' side, and features of the 'hidden reality' present the other. Any quality from the domain of one's perception does not correspond to *a priori* existing relationships and entities, a.k.a. things-in-themselves thoroughly independent of the observer's interpretational attitudes. Instead, these qualities are the results of an active interaction between the observed system and the subject. Such an interaction wherein experiential qualities of the world that the subject 'brings forth' are formed through an interplay between mind and Nature is herein named 'co-creation of qualities'.

Each object may be, therefore, considered as a dialogue between mind and Nature. The corresponding comprehension of the physical reality opens a novel space for various religious attitudes that may reflect the original meaning of Latin *religare*: 'to connect'. Every quality can thus be experienced as a sacred link between our beings and the hidden foundations of reality, metaphorically represented by the concept of 'God' in the religious traditions worldwide. On the other hand, objects could be regarded not as signs that point to themselves, but as Biblical 'signs of the times' that at the same time point to the language of God as the 'hidden reality' and to the core of the observer's being. Martin Buber noticed that 'all real living is meeting', and with such an imperative on our minds, every instance of living and experiencing qualities may become a genuine encounter between the deepest foundations of our beings and God. 'The universal divine man, the spiritual communion, has as its father its own proper action and knowledge, while its mother is eternal Love, which it merely feels, but does not behold in its consciousness as an actual immediate object'⁸, is a part of Friedrich Hegel's discourse on phenomenology of the mind, which may be appreciated anew in frame of the thesis of the co-creational nature of experiences.

The role of values in the co-creation of experiences

'Be it a leaf, a flower, a fruit or even a little water,
When it is offered to me with love and devotion
That, I with love,
will accept,
For it is offered to me with a pure mind'
Bhagavad Gita 9:26

How deep this interaction between the intersected epistemological and ontological spheres in the co-creational arising of the flow of one's experience goes may be a question of tremendous importance. Does it end with sensory-motoric reflexes, phenomenological intentions, the deepest aspirations, anticipations and values, or it proceeds all the way to one's 'spiritual' essence on the subjective side? And does it on the realistic side end with the perceptive patterns of one's environment, or it proceeds all the way to divine foundations of Nature - and as such may be represented by the metaphor of 'God' - which respond to the subject's intentions and actions on the way of his ethico-spiritual and Nature's informational evolution? In any case, perceptually constructive, reflective and spiritual 'touch' between the subject and its environment, through which all qualities of one's world of experience emanate, are all hereby postulated under the umbrella of the concept of 'co-creation of qualities'.

Nevertheless, one of the most significant ethical tasks in which both philosophies of sciences and religions can be engaged and produce a substantial contribution belongs to a quiet raising of human consciousness up to the level where the deepest human values would be accepted as the bases of reasoning and the construction of conceptual worldviews. The fundamental ‘religious’ hypothesis that has pervaded all the traditions of wise reasoning throughout the history of human civilization is the idea that the way in which people ‘seed’ by their creative thoughts, expectations and aspirations is the way in which they will ‘reap’ in the sense of facing environmental reflections of their intentional attitudes. For ‘all the things that we deal with, preach to us’⁹, as Emerson noticed, setting our attention to the idea that every detail of one’s experience presents a way which, if followed correctly, may lead the subject towards self-realization and the mutual evolution of spirit and Nature. However, these ‘mystical’ links that connect the subjective foundations of one’s experience and the guiding spiritual force of Nature - immanent in every detail of one’s experiential world - will remain sources of faith-encompassing contemplations that may, indeed, foster an unending development of the divine qualities within ourselves. In accordance with the idea that ‘every quality is a way’, instead of proposing final and eternal solutions to dilemmas that concern the conductance of individual actions and management of natural and social organizations, the attitude marked with an endless exploration of novel ethical and conductance norms may be regarded as the drive for achieving cognitive, social and ecosystemic prosperities.

The idea that the complexity of natural phenomena arises out of the co-creational relationship between mind and Nature can be supported by the fact that with physical approaching of the research objects to the observer’s mind – from astronomy, geology and geography to anatomy, physiology and psychology¹⁰ – the difficulties in providing simple and consistent depictions of the ‘real’ systems in question proportionally increase. It was proposed that accepting the mechanistic explanation of the origins and evolution of life as the ultimate one would only mean that ‘the enigmas of the Universe’ would cede their place to ‘the enigmas of human cognition’¹¹, whereas on the other hand, accepting the solipsistic idea that the Universe is nothing but a giant tautology would provide an opposite shift in the actual enigmas. Consequently, in quests for the paths of destiny one would be pointed to the ancient prophecy of the oracle at Delphi: ‘Know Thyself’, whereas in quests for the inner sources of harmony and happiness one would be pointed to hear and explore the ‘still small voice’ of Nature that underlies all the co-created experiential details. All ‘natural’ laws have presented neither passive objectivistic ‘discoveries’ nor solipsistic ‘inventions’, but higher-order products of the co-creational intersection of idealistic and realistic experiential aspects. The ‘inventional’ aspect of the formation of scientific theories implies, however, that they partly arise in human consciousness and correspondingly need to be self-referential (i.e., explicit functions of itself¹²) in certain extent, and as such either inconsistent or incomplete, as Gödel’s theorem might have already suggested^{13,14}.

Albert Einstein correspondingly observed that ‘the problems cannot be solved at the same level of awareness that created them’. However, such problematic circumstances present an inherent drive for the reflective-behavioral coupled learning. Namely, living implies a continuous cognitive production of differences, and *vice versa*. As we will see later, the processes of distinction whereby the subject continually ‘draws’ boundaries and thereby indicates various ‘insides’ and ‘outsides’ may be regarded as the fundamental operation of cognition. Such a first-order cognitive performance wherein differences and indications are generated simultaneously¹⁵, however, proceeds unconsciously and spontaneously, so that it

presents an 'invisible' condition - 'blind spot'. Whereas this primary cognitive differing can be, therefore, only performed, but neither observed nor noticed at the same level of its performance, abstract reflections that correspond to the second-order differing (i.e., observing of the first-order differing) can offer a partial insight into its proceeding. However, in that case the second-order differing will proceed as a 'blind spot'. Ascents to higher orders of observational settings (i.e., observing of observing) and flexible modifications of the actual perspectives, thus, provide the ways to surpass the imperceptible areas of experiential fields and enrich the domain of one's knowledge.

In addition to the role that the biological nature of the observer plays in defining experiential qualities, implicit values can also be regarded as 'invisible' criteria of selection and 'drawing' of boundaries at both directly perceptive and abstract domains of interpretation of our experiential worlds. Scientific and philosophical reasoning rests on implicit assumptions that cannot be verified through experiments, and thus remain the subjects of faith in their viability. Similarly, the foundations of faith are implicit in the assimilation of primary experiential features into perpetual experiential wholes. Therefore, not only do implicit values govern the interpretation of experiential phenomena through imposing the criteria of selection in the accumulation of data and the comparison of logical propositions and inferences, but may be regarded as partly guiding the formation of the primary perceptions¹⁶.

It is worth recalling that the notion of 'understanding' in the context of scientific reasoning becomes identified with 'explaining', whereas the scientific explanations are based on the principle of logically consistent incorporation of descriptions onto the bedrock of postulated logical rules, which, as a whole, in a compound form, always yield a single tautology. Hence, just like a strictly consistent application of logical rules requires placing 'If' in front of any basic proposition wherefrom a specific conclusion is derived, a precise and the only accurate application of scientific relationships would require annotating their resting on the fundamentals of implicit and metaphysical assumptions. However, besides the sets of proposed logical premises, tautologies also inevitably comprise certain 'common sense' representations and relationships. Erich Fromm accordingly observed that 'rationalization is not a tool for penetrating the reality, but *post factum* attempt to match one's desires with the existing reality'¹⁷. This niche might also provide an explanation for the tremendous sensitivity of scientific 'towers of knowledge' to sudden transitions from ideas based on implicit questioning 'how' (that lead to reinforcing the links between the basic assumptions and observable inferences) to the ones that comprise implicit questioning 'why' (that lead to revisions and reevaluations of the fundamental propositions that govern scientific practice based on the given formal system of reasoning). Experience, thereupon, gives rise to faith, whereas faith, so to say, gives to experience. 'All observations are theoretically permeated: there is no pure, disinterested, theory-free observing... our sensory organs embody that which adds up to prejudices'¹⁸, Karl Popper correspondingly thought, whereas Jean Piaget held that 'a profound synthesis between beliefs and the conditions of knowledge is what we have named wisdom, and it seems that it is the subject of philosophy as well'. Norbert Wiener similarly claimed that 'without belief that nature is subject to law there could be no science... Science is the way of life which can flourish only if people have been given freedom to have faith'¹⁹, pointing at the fact that each fruitful scientific research blossoms upon the stem of an ecstatic quest for knowledge, permeated with faith and beliefs, without which ordinary scientific professions would be transformed into 'a cold, policing inspection carried out on top of the logical labyrinths of human imagination, and resembling the role of the devil from John Milton's 'Paradise Lost'²⁰. And 'the current detective-like attitude of the heads

of scientific administration is one of the main reasons for the futility of a large part of today's scientific work'¹⁹, as Norbert Wiener further observed.

These implicit bases of reasoning and the co-creation of experiences may, however, unrevised maintain the form of 'blind spots', and as such sustain the subject's cognitive sensitivity towards environmental feedback responses to his subtle actions at a reduced level. Beautiful values typically correspond to a high cognitive flexibility/sensitivity and the corresponding tendency to increase the diversity of the optional states for the being/environment interaction. This explains why the freedom of choice brought forth by a cognitive openness towards environmental stimuli has been proposed as the ultimate criterion of the value effectiveness²¹. Comparing to computational algorithms and other strictly formal systems of reasoning, natural patterns of thinking involve metaphoric and intuitive changes in perspectives, which do not correspond to inert tracing of the logical 'threads' of one's thinking only, but to an incorporation of imaginative and logically unconstrained leaps between various established metaphorical levels of representation of the given systems as well. In such a way, they provide a natural way for avoiding the long-term 'blindness' in relation to the implicit assumptions applied in explaining the experiential phenomena and conducting personal behavior. In the following sense, Rudyard Kipling used to say, 'Who knows England who only England knows'. Like doves²², the modern symbols of peace, who in their wobbly walk need to linger every now and then so as to compensate for an innate inability to form stable visual images during moving, human beings also need to pause every now and then on their straight-heading journeys, step back and observe the features of their reflections and actions from novel perspectives. Changes that in formal languages correspond to new descriptions of the limiting conditions²³, thus present the way for surpassing the inherent limitations within any experiential point of view, whereas the natural evolution may be identified with the development of ever more flexible capabilities to create diverse experiential perspectives through their synthetic comparisons (as has been illustrated with the example of a pebble).

Contextual effects in the co-creation of qualities

'Verily, verily, I say unto you, except a corn of wheat fall into the ground and die, it abideth alone: but if it die, it bringeth forth much fruit'

John 12:24

Cognitive beings react on environmental impulses in accordance with their biophysical structure, which is unique at any moment of their existence. As a result, unique perception results, data-compressing categorizations and abstract interpretations will always be produced out of even hypothetically identical impulses. Whereas from the idealistic co-creational perspective it may be noticed that what humans may observe as qualities and objects (the latter being 'holders' of certain qualitative harmonies), a neutrino or a cricket would either not notice at all or perceptually assimilate into thoroughly different patterns that may help facilitate the coordination of experiences, from the realistic co-creational perspective numerous wiful illustrations of the theory of relativity may point out the relative character of experience in relation to physical conditions of the existential reality. Also, whereas investigations of 'identical' natural systems by means of different measurement techniques or methodological approaches can result in thoroughly different descriptions of the 'same' systems, inter- and trans-disciplinary approaches to scientific research are today widely acknowledged as the most

prosperous (but at the same time professionally riskiest²⁴) research strategies for sustainable and well-balanced conductance of the scientific practice.

Contextual character of the co-created qualities, including both the context of ‘hidden’ realistic relations that the observed systems are involved in and the subjective character of the contextual framing of the process of observing, thus possesses a decisive role in the process of the co-creational observation. An ‘overwhelming’ depiction of contexts and the ‘root-like’ picture of epistemological and ontological foundations of the experiential co-creation may in this sense become united into a single circular scheme where the foundations define the contexts and *vice versa*.

Relying on single-variable description models is equivalent to the disregard of the contextual and relational character of experiential/natural qualities. First of all, invoking qualities and quantities that are meant to stand for a single side in interaction presents an erroneous practice because such qualities were initially derived from certain relationships. Secondly, different contextual ‘enwrapping’ of invoked relationships in both interpretational and realistic domains can result in a multitude of effective qualitative characters of those relationships, so that thoroughly opposite results comparing to one’s intentions behind their invoking might be obtained.

So far we have seen that ultimate intrinsic qualities that might be able to correspond to Kant’s things-in-themselves are non-existent. It is impossible to observe only one side of any interaction, because it is imperceptible, like the ‘one hand clapping’ from the famous Zen koan. On one hand, in order to observe it, we must interact with it and - as the ‘weak’ interpretation of Heisenberg’s uncertainty principle suggests - consequently modify it. Such a modification of inherent properties that prevents formation of purely objectivistic measurement has been evidenced in the domains of quantum and multiatomic systems, cellular²⁵, psychological, physiological and anthropological systems. On the other hand, only relations in terms of differences produce raw perceptible data. The formalism of quantum mechanics has, for example, shown that instead of inert, independent and unchanging material entities, particles that constitute the Universe may be more precisely represented as processes and relations through which they interact with their infinitely spreading environments²⁶. The common characteristic of systems and quantum theories is describing relations without *relata*, correlations without *correlata*, the ‘nodes’ of postulated systems without any intrinsic qualities. This presents a natural reflection of cognition and human knowledge as derived upon differences, whereas each physical and seemingly intrinsic quality owes its existence and purposefulness to its interaction with the corresponding environmental context. The networks of life and cognition are, therefore, not webs of independent and inherently static entities, but functional webs²⁷ composed of endless relations and pathways and thus being patterns that connect patterns that connect patterns...

Although most of the actual scientific assertions (and particularly the popular ones) implicitly comprise a presumed existence of an observer-independent objective world, all seemingly intrinsic physical qualities, such as energy or momentum of a particle, could be defined only in terms of their relations with the postulated environments. For example, a particle may be observed to be highly energetic only by referring to its environment through which the particle passes. Consequently, the energy content of the particle becomes inseparably related to its environment. The same principle of the contextual definition of qualities may be applied in any other domain of the co-creation of experiential phenomena, including biological, ecological, social and cosmological complexity levels. One of the significant ethical consequences of such a niche wherefrom all qualities of a system may be picturesquely represented in terms of their

‘spreading hands’ towards the corresponding environments, is that any form of possession can be realized as illusory, and ‘to give is more than to have’, as the ancient religious ethical norm might suggest us. Martin Buber correspondingly deemed that ‘the core of man is relationship’, whereas Ferdinand Ebner observed that ‘there is no I, but I am’²⁸. Either mind or human emotions could, therefore, be seen not as localized patterns of relationships, but as limitlessly spreading relations, picturesquely represented by ‘sunny’ glowing sources of the rays of light.

The co-creational nature of the construction of primary experiential qualities and of their subsequent assimilation into perceptual and abstract wholes implies that the subjectivization and the rise in self-awareness of one’s mind in early stages of life proceeds in parallel with the development of awareness of objects as experiential features that seemingly belong to an ‘external’ world. Nonetheless, there can be no subject/observer without object/observed, and *vice versa*. As Martin Buber noted, ‘It is simply not the case that child first observes an object and then sets itself in relation to it. The tendency towards forming relations comes first’²⁹. The idea that the co-creation of experiential qualities simultaneously and interdependently establishes awareness of the subject and of the objects implies not only that verbs more faithfully represent the experiential phenomena comparing to the standard linguistic reliance on nouns, but that the ethical improvements of the epistemological foundations of our beings lead to observing ‘the world around us’ in more profound and beautiful light, and *vice versa*: the more one becomes devoted to discerning beautiful features in the ‘outer world’, the more it enriches the epistemological foundations of one’s being as well. Neglecting the precious co-creational links between the ‘observer’ and the ‘observed’ may be involved in the illusion of an alienated dwelling in the world that develops independently of the deepest aspirations of our beings. Or as Martin Buber further noticed, ‘If culture ceases to be centered in living and perpetually renewing relational appearances, then it hardens into It-world...then smooth causality which did not have the power of disrupting spiritual conceptions of the Universe before, raises until it becomes an oppressive, suffocating destiny’²⁹.

Yet, in accordance with the ‘co-creational’ thesis, the origin of experiential qualities is explained through a mutual creative involvement of the subject and its environment. This implies that individual experiential worlds can be considered neither as solipsistic ‘inventions’ independent of the environmental content, nor as objectivistic ‘discoveries’ independent of the subject’s cognitive foundations. Instead, all the products of one’s perceptual activities can be regarded as co-creational ‘touches’ between the subject and its environment, which may from the religious perspective yield a metaphor of the co-creational ‘walking along the road that leads to evolution of heavenly purity of human spirits and awakening of the dormant kingdom of heaven throughout the natural widths’. The moments of indignation depicted by either childish superstitiously objectivistic anger caused by stumbling over a stone and accusing it for mean intentions³⁰, or manipulative solipsistic irritability caused by the deviations of experiential patterns from the way the child commands them to behave, can be transformed into serene, humble and attentive cognitive attributes that naturally arise from the acknowledgement of the co-creative interaction between mind and Nature as the cornerstone of any being and becoming. Objectivistic quests for the ‘treasures of life’ in ‘external’ situations and landscapes, independently of the epistemological settings of one’s being are reminiscent of the quests for a pot of gold at the rainbow’s end. The latter cannot be ‘touched’ because the rainbow’s position shifts together with the imaginary path that connects the subject’s observational perspective and the position of the Sun. ‘Imaginary paths’ that link mind and Nature accordingly present the ‘strings’ that fluctuate and thereby create all the details of one’s experiential world. Through

embracing the co-creational nature of experiences, many cognitive, ethical and emotional disharmonies that result from the subject's 'receding' towards only one of the sides in the balance – to the side of 'Nature' with the symptomatic observation of predestined, mechanistic and observer-independent world which justifies the neglect of one's precious improvements of cognitive and ethical foundations, or to the side of 'mind' alone which typically results in the sense of mental isolation, manipulative anger and disregard of the importance of comparisons of one's own rational and emotional perspectives with the ones of the others – could be transformed to an 'enchanted music' that corresponds to one's alternate cognitive approximations towards opposite, but mutually accentuating balancing sides, as we shall see later in the text. As in the movie *'La Strada'*, when the circus tightrope walker comforts sad Gelsomina by pointing her to an all-encompassing meaning and the key role of even an inappreciable pebble in the story of the development of the whole Universe, one's feeling of devastating anger and hopeless desperations that naturally arise from solipsistic and objectivistic cognitive stances may similarly be transformed into a creative wondering in front of the experiential patterns that arise through the co-creational interaction between mind and Nature, so that the subtle lines and ridges 'drawn' on a tiny pebble that one carries in the palm of one's hand may be seen as inexhaustible sources of genuine 'communications' that emanate from an evolutionary 'walk' in which 'divine' Nature similarly points to an all-encompassing meaning and sources of observation, contemplation, research and refinement of human knowledge (and attainment of ever more beautiful experiences), as 'sleeping' in small, unapparent and 'hidden' features of experiential realities.

Information of the world as differences

'Why no! I never thought other than that God is that great absence in our lives, the empty silence within, the place where we go seeking, not in hope to arrive or find. He keeps the interstices in our knowledge, the darkness between stars'

R. S. Thomas, *Via Negativa*

In the previous sections we have shown that biological systems are sensitive only to differences in the spectrum of environmental stimuli that they are in contact with. Gregory Bateson correspondingly defined information as a 'difference that makes a difference'⁶. The realistic side of the co-creation of experiential qualities comprises environmental differences that 'invite' cognitive systems to internally construct the corresponding differences within their autopoietic cognitive networks. In that sense, only the impulses of environment that succeed in inducing a change in the structure of the cognitive being may be considered as information. '*In-formare*' in Latin originally meant something created from within, and the contemporary connotation of 'information' as objectivistically transmittable differences that may consequently imply biological instillation of knowledge and unidirectional stimuli – response manipulation of beings, could accordingly cede its place to the acceptance of subjectively constructive character of all 'information'. Information may be regarded not as an objective quantity, but as a qualitative process of informing³¹, although pervaded with potential ambiguities and incompatibilities of meaning that arise out of its inherent subjective and contextually dependent character. However, incompatible descriptions of the 'same' systems from diverse perspectives present the starting points for the development of any science and knowledge whatsoever; for, we have seen that only synthetic comparisons of different, seemingly incompatible and

exclusionary perspectives may give rise to novel, higher-order experiential aspects that unite the lower-level standpoints around the concepts wherefrom once confronted niches would ‘watch’ together the same horizons of knowledge. Because only contrasts, fluxes, changes and differences could be sensed by biological systems, on the realistic co-creational side everything potentially observable presents qualitative emanations of relationships and processes, whereas on the other, subjective co-creational side one needs to constantly change perspectives in order to be able to notice subtle changes and frequently almost constant flows of environmental stimuli as sources of significant information. ‘The unchanging is imperceptible unless we are willing to move relative to it’⁶, observed Gregory Bateson, whereas the quasi-scientific observation of a frog cooked alive after being heated with a sufficiently low temperature gradient, and of numerous accommodational cognitive phenomena, including the effect of spontaneous instigation of one’s attentiveness by producing novel cognitive contexts and environments, may from a wider perspectives support the thesis of the ‘differential’ character of experiential content.

Each information presents a boundary (either a physical or an abstract one) that divides a certain uniformity to corresponding ‘insides’ and ‘outsides’. Consequently, every form of knowledge is of polar structure: every ‘no’ comprises implicit ‘yes’ (so that every negation presents an affirmation at the same time³²), every distinction, naming and description implicitly point to the rest of one’s experiential context, every critique and declaration of goodness and validity comprise implicit pointing to what is not good and viable. Because of being a link between particular ‘insides’ and ‘outsides’, every information as a boundary at the same time presents the line of separating and connecting the respective poles, and could be, therefore, similar to each quality, regarded as a way. For, each way represents a path of simultaneous separateness and connectedness. Structural coupling between individual beings and their environments, and the co-creational dichotomy between mind and Nature reflect the same symbolism of the Way.

Every description and every act of creation, therefore, imply a formation of polarities and a breaking of symmetry from the system states pervaded with uniformities and higher symmetries. The theories nowadays employed in explaining the origins of both the Universe and life invoke gradual differentiations of energies, symmetries and biological self-organizing patterns from the initial states dominated by physical singularities and the absence of primordial autocatalytic reactions as precursors of advanced metabolic cycles, respectively. Traditional narratives that depict the origins of the world employ various metaphors to account for such differentiations of complexity of natural relationships in the course of their evolution³³. The Biblical story of Genesis includes the descriptions of dissociation of light from darkness, day from night, heaven from earth, and sea from land, and can be correspondingly regarded as a metaphorical reflection of the evolutionary streaming of life towards increasing informational, negentropical content of both human cognitive spheres and the living environment.

The evolutionary progress is inherently related to the formation of ever subtler differences in the domains of perception, abstract reflections, being/environment interactional interface, and ‘realistic’ informational content of the environment in which individual beings are immersed. The evolutionary ‘invention’ of consciousness (i.e., self-awareness) has corresponded to the capability of autonomous ‘drawing’ of reflective differences and establishing boundaries within our experiential domains in accordance with the outlines imagined. ‘Draw a distinction and a Universe comes into being’, was accordingly the celebrated George Spencer-Brown’s norm. Emergence of two from one has ever since presented a miraculous natural event, whereas the moments of Big Bang, the first division of a fertilized egg cell, or a hypothetical decision of a

being living in an imagined, Schopenhauerean world - in which the environment would perfectly correspond to the being's inner aspirations and desires - to sacrifice its uniqueness and share the world with a co-creational 'partner' (as has been depicted in the form of a profound screenplay parable of Andrei Tarkovsky's movie 'Stalker') present examples that concord with the famous Chuang-tzu's observation: 'If there would be no others, there would not be me either'³⁴.

It seems that in order for anything to appear, a boundary that intersects a single entity or perspective forming two contrasting entities needs to be drawn. To render an information perceptible, a boundary between two individually imperceptible areas needs to be established. The evolution of human knowledge similarly implies the process of differing within continual and uniform wholes, and in that it resembles the role of 'Maxwell's demon'³⁵, a being that – similar to the Little Prince who on his small planet needs to continually make differences between roses and baobabs³⁶ – intelligently differs gas particles according to their heat content, and as a result of such selective permeability decreases the entropy of a gas vessel. It may be recalled that even the Latin word for science - *scientia*, comprises Indo-European root *skei*, which denotes the activity of dividing, selecting and distinguishing. Then, it is not only that each representation of our experiences in the domain of reflective knowledge requires comparisons of perceptive and symbolic constancies, but also in order for any abstract inference to be arrived at it becomes necessary to perform a comparison between at least two logical propositions. 'Relationship is always a product of double description'⁶, is the thought that Gregory Bateson demonstrated by offering an analogy between forming a novel spatial perspective through comparing the images obtained from a pair of eyes and the idea that comparing at least two different perspectives may provide us with a relationship and as such open the way towards new levels of understanding.

However, every postulated or imagined pathway or relation necessarily comprises two end points. Consequently, in order to define or observe any change, it becomes necessary to establish a relation between at least two constancies. Change in the distance between two objects can be, for example, observed only after assuming the constancies of these two objects in time. If one observed a shift in the position of a star by comparing two photographs of a stellar constellation, such an observation would be based on the presumed constancy in the appearance of the star and of the constellation in the background. Analogously, each property referred to in scientific or common linguistic descriptions is always drawn relative to some implicitly presumed constancies. Hence, there could be neither absolute qualities nor absolute skepticism and query in the domain of human knowledge and experience. For, 'if one wanted to be skeptical about everything, he would not arrive at skepticism at all... An inquiry about everything would not be an inquiry at all'³⁷, as Ludwig Wittgenstein pointed out.

From the fact that living beings are able to perceive only differences, it may also become clear why abstract reflections are predisposed toward analytical reasoning. The method of thinking wherein boundaries between both seeming perceptive constancies and their abstract representations become diversified during the development of one's knowledge presents a continuation of the child's perceptual distinctions aimed at improving the coordination of its experiences, although at the cost of the subjectivization of its mind and the development of an awareness of its separateness from 'the world around'. However, thinking based on analytical reasoning alone would be as unsustainable and unimaginable as a bird flight with only one-wing-flapping. A child's construction of experiences is based on the balance between diversifying distinctions and assimilations of elementary experiences into wholes such as objects or surrounding beings. In that sense, the synthetic linking of diversely separated and disconnected

experiential wholes into new meaningful unities corresponds to another, genuine religious (from *religare*) need inherent in human beings, which resembles the search for the childish unity with the whole world as in the initial stages of one's life. The metaphor of the Way corresponds to such a simultaneous existence of separateness and connectedness (which all ways, roads and paths symbolize), and through their dynamic interplay the evolution of human knowledge and cosmic informational content proceeds. Fostering diversity that preserves unity and unity that preserves diversity, therefore, presents the key ideal to truly wise, simultaneously sustainable and evolutionary management of the interaction between the beings and the environment.

Patterns composed of alternate differing and merging may be discerned as elementary matrices of reasoning and both perceptive and abstract ordering of experiential worlds. As in the case of a grandfather clock where one becomes free to decide whether the clock strikes the first hour multiple times or an hour indicated by the number of consecutive 'dongs', the environment provides impulses that cognitive beings autonomously arrange into categories (such as numbers in this example) by applying the operations of identifying and differing¹. In this case, the counted experiential patterns may not be regarded as existing independently of and prior to the process of counting, because it is the discerned acts of perceptual categorization that are being reflectively counted. The basic concepts of scientific reasoning, including Cartesian coordinates, time and mathematical operations are similarly not present in the 'world around us', but are being co-created in the interaction between environmental stimuli and active 'constructivist' minds. Mathematical abstractions as prototypes of conceptual patterns ostensibly detached from the real-life experience may be, therefore, notified as co-creatively founded on biological, ontological and 'realistic' grounds as much as on the subjective ones. Investigations of physical phenomena that are regularly considered as detached from subjective observational aspects may similarly be acknowledged as co-creatively founded on interpretational, epistemological and 'subjective' grounds as much as on realistic ones. Consequently, the scientific disciplines of physical chemistry, philosophy and biology could be arranged within a closed circle wherein each successive field would provide epistemological foundations for the preceding one³⁸. As Erwin Schrödinger put it, 'The world is given to me only once, not one existing and one perceived. Subject and object are only one. The barrier between them cannot be said to have broken down as a result of recent experience in the physical sciences, for this barrier does not exist... The object and its image in the mirror are one and the same. The world in space and time is only our representation'³⁹. And indeed, the co-creational perceptive coalescence of the observer and the observed prevents any attempts of non-arbitrarily and 'neutrally' distinguishing between the two.

With an ability to perceive only differences and boundaries between individually imperceptible wholes, cognitive beings may be only able to observe the cracks in an endless continuum of the divine physical reality. 'The deepness of the world and its secrets are not found where the sky is filled with clouds and is dark, but where it is bright and clear'⁴⁰, as Joseph Knecht observed in Hermann Hesse's 'Glass Bead Game'. In Taoist tradition it is regarded that empty, unused space on a painting carries the essence of its value, whereby Claude Debussy observed that 'music is the space between tones'. 'While we look not at the things which are seen, but at the things which are not seen: for the things which are seen are temporal; but the things which are not seen are eternal' (Corinthians II 4:18), as St. Paul the Apostle professed, pointing to the essential subject of interest and devotion of all religious and ethico-aesthetical thoughts: invisible and implicit patterns of the world and communication⁹. Continual communicational explication of these implicit sources of meaning may be noticed as the pathway

of natural evolution and scientific progress. ‘Our knowledge of the world seems to me like a top of an iceberg; it is like a tiny piece of ice that protrudes out of the water, whereby our ignorance reaches the greatest ocean depths’⁴¹, Heinz von Foerster correspondingly declared. Besides their metaphorical character, another common feature of science, philosophy and religion lies in their representation of the relationships that connect the invisible foundations of reality with the apparent experiential phenomena. By acknowledging the co-creational nature of experiences and deriving from there on not objective and universal, but metaphoric, multiversal and pragmatically co-orientational nature of sciences, religions and all other communication endeavors, ethical virtues such as love, care and benevolence may be notified as those implicit bases upon which all the fruitful human interactions in the respective domains rest.

‘Two nodes and a change’ as the nature of human thinking

‘The feeling remains that God is on the journey, too’

St. Teresa of Avila

In the previous section we have seen that proposing a pair of fixed end points and a change presents the basis of human thinking. Such a conceptual organization of reasoning may be, therefore, neatly represented by the metaphor of the Way, as well as by the one of all-encompassing music. Similar to simultaneous separateness and connectedness symbolized by every way, acoustic oscillations arise through the alternate moments of approaching and distancing of two nodes. They should never become too distanced or completely merged if the charm of music is to keep on existing, i.e., if the fruitful ways of interaction are to be preserved. Despite the fact that language commonly stresses only one side of interaction, all reasonable explanations need to rely on relations. The relation between subject and ‘explanatory principle’ – locomotive and the train’s caboose – presents the key to reasonable scientific explanations.

Scientific explanations ultimately rely on relationships, and some of the remarkable blunders in scientific practice have been related to adoption and implementation of certain qualities as fundamental ones. Despite this, the nature of human reasoning is such that an explanatory principle (equal to placing a caboose at the end of the train of logical thoughts or fixing the nodes that enable the strings of constructed relationships to oscillate and produce sounds) needs to be employed within each explanatory procedure. The examples of explanatory principles in science may include ‘gravity’ in Isaac Newton’s classical mechanics, the ‘speed of light’ in Albert Einstein’s theory of relativity (wherein the assumption of identical physical laws permeating each particular observational frame, as a matter of fact, supports the relativistic character of physical observations, and accordingly provides this theory with an inherent ‘absolutistic’ character), ‘instinctual drives’ in psychoanalysis, and ‘genetic code’ in the contemporary molecular biology. Some of the notable examples from the field of philosophy may include the concepts of ‘Will’, ‘Absolute’, ‘Absolute Spirit’, ‘Being’, ‘I’, ‘*a priori* categories of understanding’, ‘Monads’, ‘*Res cogitans*’ and ‘The Highest Good’ in the philosophical systems proposed by Arthur Schopenhauer, Joseph Schelling, Friedrich Hegel, Martin Heidegger, Johann Gottlieb Fichte, Immanuel Kant, Gottfried Leibnitz, René Descartes and Aristotle, respectively. In theology, the concepts of God, soul and the Holy Spirit present ‘explanatory principles’ as the end points of one’s inquiry within the given ‘formal’ system of reasoning.

Just like the Sun cannot be watched directly, but only the effects of its light sourcefulness can be appreciated, explanatory principles as the key points in formal systems of reasoning can only be invoked, but never explained, particularly because they are used to explain everything else. Circular relationships wherein each cause presents an effect and *vice versa*, become frequently employed in order to overcome the logical paradoxes that arise from the application of iterative algorithms. However, due to the constant character of linguistic notions, employed to ensure an efficient communication of meaning, the same fundamental terms in each specific explanatory methodology remain. Although information could be presumed as existent even after their sources have decomposed, there may be no exactly constant, fixed and ultimate entities in the organization of the world. All cognitive systems are in the dynamic states of continual biological self-production and becoming, whereas - as we shall see later - the fundamental units of evolutionary survival are not genetic units, but epigenetic patterns and relations. As physical entities are in the framework of quantum field theory represented not as objects of permanent qualities, but as patterns of their relations with endless surroundings, cognitive beings may be considered as similar relations through which their cognitive foundations spread towards the world. The significance and beauty of information that a being co-creates and as such 'gives' to the world comprise the essence of his being, which may be illustrated by the movie 'It's a Wonderful Life', and which explains why the metaphor of the Sun is frequently elicited as the ultimate ideal on the path of the spiritual evolution of living creatures.

'The mere fact is oftentimes without interest; it has been noted many times, but has rendered no service to science; it becomes of value only on that day when some happily advised thinker perceives a relationship which he indicates and symbolizes by a word'¹⁰, Henri Poincaré claimed in his essay on the future of mathematics. Truly, in the domain of scientific reasoning, only qualitative or quantitative relationships can be used for explaining natural events⁶. Single dimensional qualities can be consistently used only in the frameworks of logical matrices, whereby the effective character of the latter is dimensionless. Implicit assumptions of constancies in form of tautological premises of reasoning may be seriously shaken as soon as we start investigating the nature of cognition, experience and language, and realize that the linearized pathway of scientific method presents, in fact, a cyclical, abductive pattern of the research conduct. By reducing the nature of scientific qualities to their elementary experiential character, one would eventually realize that conceptual networks of reasoning may be basically supported by only dimensionless qualities, such as probabilities, information (as either perceptive boundaries or quantities of selection), differences, forms, contrasts, symmetries, correspondences, congruencies and conformities, which all present abstract and non-localizable qualities. Similar to the ideas of phlogiston, instinct, nutritional calories, and the 'dormative' principle that was thought to rest in opiates, all the explanations based on single variable models and unilateral principles that are acontextually designed to account for all the respective natural phenomena, regardless of the other side of interaction, are thus doomed to failure. Delusionary apprehension of certain physical qualities as fundamental ones stems upon a disregard of the fact that scientific propositions are not objective statements, but human inventions applied for the mutual coordination of experiences, and as such are based on numerous implicit assumptions. On one side, these implicit assumptions cannot be verified by means of experiments, whereas on the other side their resting upon the foundations of subject's faith and belief in their validness disables them from being used in proving verily any scientific hypothesis at all.

Avoiding the traps of objectivistic and solipsistic stances on the way of reaching fruitful consequences of the concept of co-creation of qualities

‘A flag was waving in the wind. One of the monks observed: ‘Look, the flag is moving’. The other monk replied: ‘It is not the flag that is moving; it is the wind that is moving’. Then the Zen master said: ‘It is neither flag nor wind that are moving, but it is a mind on a journey’

Zen Story

A fundamental consequence of the proposed co-creational nature of the emergence of experiential qualities is that epistemology and ontology, as much as idealism and objective realism, as traditionally divided approaches to describing reality become integrated into an interdependent and inseparable whole. Thereupon, if one seeks to unravel some of the natural mysteries, one needs to know how humans know (i.e., to ‘know thyself’, when a clear and bright view towards Nature may open), and *vice versa*: if one seeks to know oneself, one must face through one’s questioning and inquiry the mysteries of Nature. Versatile philosophical branches of contemporary scientific disciplines and theories, including systems theory, theory of constructivism and autopoiesis, first- and second-order cybernetics, information theory, quantum theory and theories of nonlinear, dynamic and complex systems, are closely related to investigating the fundamental epistemological question: ‘How do we know?’. Owing to the co-creational coalescence of the observer’s and the observed system’s influences at the level of final perceptual and interpretational outcomes of the observer’s experiences, inquiries over the basic epistemological questions simultaneously present the way of improving one’s understanding of the natural realities. ‘It is not the thoughts that ought to be known, but the one that thinks’⁴², are the concordant words from Kaushitaki Upanishad. These words may point to the fact that mind reflections and scientific expressions both originate from implicit foundations of the subject’s reasoning and its inherent biological nature, so that learning about the effects of these (and all other) foundations upon reasoning, emotional and behavioral patterns may be regarded as the main tasks of the true philosophy that brings the keys to a wisdom of being. It is through deepening the basic epistemological questions that one opens the door to the discovery of metaphorical and socially co-orientational character of science and language, and may thereafter travel along the way of overcoming their objective character (deprived of the need to invoke ethical values in the course of their usage) and spontaneously stimulating the roots of a more harmonious, flexible and fruitful reasoning¹⁶.

The ethical flaws of objectivistic cognitive stances are numerous. Neglecting the co-creational character of all critiques, opinions and ‘measurements’ of others, and correspondingly disregarding the fact that the subject’s cognitive foundations in terms of phenomenological intentions, anticipations and communicational aspirations become partly reflected in the observational outcomes, may lead one to develop somewhat intolerant and manipulative attitudes in relationships with others. One may become a ‘peep-hole’ observer²³ conquered by the illusion that he is able to change the world without changing himself, and thus judge about the world in a detached, neutral and objective manner. The subject’s responsibility for the state of his world may become diminished, as all the experiential details are to become regarded as events taking place in a distant and subject-independent surrounding. However, responsibility and purposefulness that one ascribes to existence seem to inevitably go hand-in-hand, so that the

suppression of responsible decisions via submissiveness to the power of authorities diminishes one's creative capabilities and depletes one's inner sources of inspiration.

The truthful character of scientific expressions that are mistakenly identified as real and objective representations of the respective natural phenomena, presents such an authoritative force that requires an unconditional 'surrender' and 'retreat' of incompatible perspectives. For, together with acknowledging the truthful character of science and language, the space for 'battles' among representational perspectives open, since only one is the 'ground of truth'. When it comes to scientific communication of meaning, it seems that in the end 'the question is which is to be master - that's all'⁴³, as Humpty Dumpty notified Alice in Wonderland. However, it is a well-known psychoanalytic fact that masochistic submissiveness and sadistic oppressions become simultaneously manifested at different domains of one's psychological attitude, and effectively compensated as such^{17,44}. Mixing up 'maps with their territories'⁶ - i.e., scientific and linguistic representations with the corresponding experiential phenomena that they metaphorically point to - gives rise to objectivistic attitudes and submissiveness to the 'true' nature of knowledge, which may be manifested in form of the tendencies to dominate and oppress at various other levels of one's existential manifestation. Despite this, scientific knowledge truly rests of human willingness to benevolently coordinate each other's experiences by means of accepting, applying and enriching the complexity of the metaphors of science.

In parallel with the externalization of seeming constancies of the co-created perceptual qualities and the wholes composed thereof (such as 'objects' and 'beings'), one forgets that all the constituent qualities and boundaries of these experiential wholes are being incessantly created and semi-autonomously established. The qualities of the co-created 'external world', therefore, become seen as pre-given, despite the fact that they are semi-subjective constructions. 'All objects are indications of processes and the symbols of capability of our neural systems to create stabilities and calculate invariances'⁴¹, as Heinz von Foerster noticed. During the child's cognitive development, the relational character of objects and qualities, however, gradually pales into cognitive background, whereas the assumptions of the existence of an objective world take over and become affirmed as the basis for the coordination of subsequent experiences. In fact, the more one becomes successful in stabilizing the perceived qualities in forms of objects with permanent outlines and qualities, the higher the potential for feelings of 'objectivistic' isolation and burdening individuality may be. Cognitive intentions aimed at fixation of experiential qualities correspond to various attitudes of reliance on fixed norms and prejudgments at different organizational levels of consciousness, and could be picturesquely represented by the fixed, focused and rigorous look of eagle's eyes, hesitating and afraid to revise and reevaluate the foundations of perceptual and reflective cognitive patterning. Aging normally corresponds to such an affirmation of over-stabilized, rigid and routine *a priori* 'recognition' (although always being a 're-creation') procedures in the co-creation of experiential qualities. But as the sunlight becomes reflected from the sea surface in innumerable tiny and tenderly wavering dazzles, a wondering attitude of flexible revisions of one's foundations of thinking may be depicted with similarly sparkling and vivid eyes that with their inquiring attentiveness 'heavenly' seed the qualities they co-create.

The whole history of the evolutionary progress in adaptive capacities, and the alternations of social trends, ethico-aesthetical behavioral norms, conceptual worldviews and generations may be seen in the light of the continual fulfillment of Lao-tzu's norm that 'flexibility conquers strength'⁴⁵ (Tao-te-ching XXXVI). As the flexible renaissance of scientific inquiry defeated rigid religious norms and intolerant inquisitorial attitudes, rigid approaches of contemporary

objectivistic and mainstream branches of science nowadays become susceptible to (and fruitfully enriched by) the flexible standpoints of systems science and other subject-oriented philosophical approaches, enwrapped in novel and contemporary ways for interpreting the ancient ethical guidelines that religious narratives are abundant with, and proceeding according to the norm that ‘every scribe which is instructed unto the kingdom of heaven is like unto a man that is an householder, which bringeth forth out of his treasure things new and old’ (Matthew 13:52). Independence of the method of scientific inquiry on the content of the probed knowledge has presented a typical flaw during the history of the scientific method, despite the fact that no progress in science could be related to its proceeding along the line of preconceived methodologies or a closed abstract set of rules¹¹. Research methods, therefore, need to continually adjust to their objects of research, whereas the both are becoming subject to change during the evolution of knowledge or complementary observations from different perspectives. From the point of view of physical sciences only, a single molecule of water included in a river or a sea stream may be, for example, investigated through various theoretical frameworks⁴⁶ that involve multitude of qualities, ranging from atomic and molecular orbitals to hydrogen bonds, density, purity, osmotic and vapor pressure, capillary forces, compressibility, surface tension, cohesive and adhesive forces, thermodynamic quantities, qualities inherent in the laws of hydraulics, gravity, celestial orbits and the qualities from the laws of geometry and trigonometry in explaining tidal effects, the variables of hydrodynamic principles, ecosystemic and biospheric ‘re-cycling’ and the natural purifying of water, and the qualities of meteorology and climatology in understanding and predicting the movement of water within the actual weather patterns. Reducing such a versatility of research perspectives (that adjust their inquiring methodologies to complexity of investigated systems) to a single probing methodology would decrease not only the potential diversity of the overall sample space of the current knowledge, but narrow or even permanently obstruct the pathways that may lead to novel synthetic conclusions via comparing and correlating various perspectives, which has previously been shown as the general basis for the advancements in science and philosophy.

Analysis of experiential events by linguistic means presents an inescapable aspect of a fruitful co-orientation of human experiences, although its immanent flaws correspond to an unavoidable fixation of objects and their qualities into mapped symbols and operations of the given formal system of reasoning that entails each transfer of experiential knowledge into the communicative domain of language. Maps, so to say, need to be composed of fixed entities, whereas it is identifying these entities and the literal representations that they comprise not as modest and pragmatic metaphors, but as true and universal reflections of the natural order that produces objectivistic flaws in our reasoning. Objective representations of natural phenomena (similar to their linearizations) are only pragmatic efforts that facilitate human-to-human communications related to a mutual co-orientation of experiences, although at the same time they enable an errant elimination of scientists’ responsibilities via accepting illusionary observer-independent observational attitudes and identifying ‘maps’ with their ‘territories’. Each application of external causality as the sole explanatory basis (and not as a pragmatic and conventional means for organizing the mutual coordination of experiences) can be, therefore, translated to an implicit excuse that ‘one is not responsible for the observed effects’⁴⁷. However, with acknowledging the co-creational and partly subjective character of the scientific practice and the vital significance of the ethical and philosophical foundations of knowledge for the design and development of R&D pathways (routinely neglected in standard, frequently purely programmatic education), a large extent of the irresponsible and inert aspects of the scientific

progress would be able to cede their place to more creative research attitudes permeated with and based on a powerful moral responsibility of the researchers. In order to avoid Cain's irresponsible attitude depicted by the famous words: 'Am I my brother's keeper?' (Genesis 4:9), and the tragic consequences it may introduce, we should keep in mind that responsibilities and a creative purposefulness, as we have already noticed, support each other on the road to every humane development.

However, in applying one's efforts to cope with the 'streams' of objectivistic attitudes that are inert to subjective experiential effects, there is always an imminent danger of 'falling' to the opposite side of the dynamic co-creational balance, dominated by solipsistic 'whirlpools' that are inert to the productive 'streams' of common experiential features. Whereas Humberto Maturana compared experiential phenomena with an underwater submarine ride wherein - similar to biological cognitive inability to gather any insights into ontological features of the environment - the submarine crew can never form the concepts of 'coastal ridges', 'seas' and 'lands', but only explain them in terms of environmental constraints to the coordination of the submarine's movements⁴⁸, Arthur Schopenhauer started his major work with claiming: 'The world is my representation: this is a truth valid with reference to every living and knowing being, although man alone can bring it into reflective, abstract consciousness. If he really does so, philosophical discernment has dawned on him. It then becomes clear and certain to him that he does not know a sun and an earth, but only an eye that sees a sun, a hand that feels an earth; that the world around him is there only as representation, in other words, only in reference to another thing, namely that which represents, and this is himself'⁴⁹. However, an observer is due to the 'blind spot' effect never able to see his true 'eye that sees a sun', as much as he is not able to directly observe and resolve the ontological order of his cognitive environment. All the experiential results of one's perceptual and 'representational' activities emanate from a continuous co-creative 'dialogue' between 'hidden' epistemological foundations on the subjective co-creative side, and 'hidden' ontological foundations on the realistic co-creative side. The concept of co-creational nature of the emanation of experiences might correspondingly present a Middle Way metaphysical foundation for the construction of philosophical 'pillars' as supports for a more profound and clarified empirical investigation of reality and scientific communication of meaning.

From the co-creational perspective, each experiential detail may be regarded as a 'sign' that metaphorically points not only to the subject's deepest values and aspirations that partly comprise the cognitive foundations of experiential co-creation, but to 'divinely revealing' messages of ontological origins that partly comprise the realistic foundations of the co-creation of experiential qualities. This 'hidden' and somewhat mystical character of the both co-creative sides in their interdependent 'drawing' of personal experiences justifies the use of metaphysical and theological metaphors in representing experiential details as the products of the communication between mind and Nature, that is, spirit and God. 'Eyes and the Sun' of one's experience may be, therefore, regarded as reflections of the communication between deep and profound 'eyes of the spirit' of the being's cognitive foundations and 'Sun-like' foundations of life on the road towards a mutual evolution of cognitive and informational landscapes of mind and Nature, and the spiritual 'glows' that arise in their co-creational interplay. Exploration of epistemological foundations in terms of observing the reflections of the subject's assumptions and aspirations on the state of his experiential world on one side, and the quest for an 'angelic guiding voice' of Nature that pervades the world as emanating from the ontological foundations of the being's experience on the other side, as well as relating the two, may become regarded as

the essence of the true religious studies. It is highly probable that in the course of such a genuine quest one will realize that discerning the reflections of one side of the co-creative foundations implies an inherent insight into the reflections of the other, so that the words of Meister Eckhart - 'who wants to get to the foundations of God, needs to get to his own foundations... no one other than God resides in the foundation of soul... here is the foundation of God and my foundation, so that my foundation is the foundation of God... God and me, we are one'⁵⁰ - may apply in accordance with St. Augustine's theological concept of the perfect correspondence between 'knowing God' and 'knowing oneself', Joseph Schelling's idea that 'Nature is visible Spirit; Spirit is invisible Nature', and neo-Hegelian, dialectical representation of ontological nature of the world, which is to be mentioned later in the text.

Beneficial consequences of the implementation of the idea of the co-creational nature of experiential qualities may indeed be numerous. Instead of identifying with either objectivistic or solipsistic extremes, the significance and meaning of the co-creationally arising experiential qualities are placed upon the bidirectional, interdependent and co-evolutionary interaction between 'mind and Nature' (i.e., 'spirit and God'). For, only interactions driven by mutually developing, co-creational character possess the potential to enkindle the sparks of carefulness, inquiring and wide-awake awareness, love and co-evolutionary learning to an ardent blaze.

Spiritual and materialistic unity springing out from co-creational thesis

'It is the glory of God to conceal a thing: but the
honour of kings is to search out a matter'
Proverbs 25:2

Two of the most revolutionary theories of the 20th century - quantum theory and the theory of relativity - have stressed out the non-existence of absolute referential frames and the inseparably connected observer-observed interactions. One of the consequences of the framework of reasoning wherein every observation is *de facto* the one of an interaction and mutual change is that 'understanding of the world' presents, indeed, an indication of the understanding of our own understanding. This is because the co-creational investigation of reality is partly 'through a glass, darkly' observing the indications of natural reality, and partly investigating our own cognitive, biological and ontological nature. 'Observers in action primarily look into themselves. What they describe is their view to how the world looks to them'⁴¹, as Heinz von Foerster observed. Saying that 'the world is fine' may, therefore, be translated to 'I am fine'²³, and *vice versa*. Werner Heisenberg in a similar sense wrote that 'in natural sciences, the object of research is not any more nature as such, but nature exposed to human questioning, and in that sense, man herein faces himself'⁵¹. The co-creational flow of experience may thus be regarded as a continual responding of the 'hidden reality' from one co-creational side to the subject's deepest aspirations and questions with which he approaches the intertwined and simultaneous phenomena of autopoietic existing, perceptual constructing and learning from the other co-creational side. However, the extreme solipsistic attitudes and the ideas of a Schopenhauerian world providing perfect and sole reflections of our being may remind us of the ancient story about Narcissus and his 'mirroring' lake⁵². Thereupon, instead of expecting that Nature presents a passive reflection of mind's questions, concepts and intentions as in Schopenhauer's worldviews, adopting the bidirectional character of the co-creation of experiences gives rise to actively communicating, dynamically changing and mind/Nature co-evolving cognitive attitudes pervaded with the awareness of inexhaustible sources of religious

devotion, overwhelming joy and humble creativity, immanent in each experiential detail as arising from the conversation between the holistic ‘voices’ of mind and Nature. The classical, bifurcational indeterminism and the probabilistic behavior of quantum particles, coupled with the proposed co-creational nature of experience, could present the ‘pillars’ that support a view at the spiritual nature of matter, regarded as inert and mechanistic in the frameworks of objectivistic science. As Leslie White noted, ‘Matter can be regarded as a form of thinking, whereas thinking can be regarded as a form of matter’¹⁰. Mihajlo Pupin might have also had a similar idea in his mind when he wrote the following lines: ‘God’s spiritual realities are invisible, but they are illustrated and made intelligible by the physical realities revealed in the physical things which are made. According to this interpretation of the Apostle’s words the physical and the spiritual realities supplement each other. They are the two terminals of the same realities, one terminal residing in the human soul, and the other in the things of the external world. Here is one of the fundamental reasons why Science and Religion supplement each other. They are the two pillars of the portal through which the human soul enters the world where the divinity resides’⁵³.

From the perspective of sole spiritual transcendence – which may be, as an ostensible paradox, regarded as a form of ‘materialism’ – the devotions to ‘distant’ religious aims may make us ignorant of the nearby beauty and genuine sources of meaning. However, the dynamic spiritual immanence within the co-creational threads of experiential realities opens the door for observing every detail of one’s experiential reality as a profound communication between the spirit and God. In a hypothetical world wherein God would occupy the place of an external observer (as was depicted in mechanistic, ‘clockwork’ models of the Universe during the enlightenment era), ethico-aesthetical qualities that present the basis of culture, science and humanity in general would gradually vanish, in accordance with the Lord Tennyson’s verse: ‘The stars, she whispers, blindly run’⁵⁴. Senses of wonder that drive the evolution of science, consciousness and maybe even life are inherently related to the existence of horizons and the areas of unknown in the domains of human knowledge, and would similarly become trivialized in a hypothetical world dominated by perfect, all-encompassing power of knowledge which endows humans with the abilities to predict and control all natural phenomena. ‘Does God have a big TOE?’²² (TOE, of course, meaning Theory-Of-Everything⁵⁵ as well) has been a lucid question proposed by Leonard Sweet, whereas Leslie White further mentioned that ‘theory that explains everything, does not explain anything’¹⁰, thus corresponding to the ideas of Lucretius who through an Epicurean, atomistic and atheistic framework of reasoning noticed how without an inherent indeterminism ‘nature would not create anything’⁵⁶. Aspirations to learn and ingrain the essential human values would wither in a world free from the incessant ‘battles’ between known and unknown, harmonious and disharmonious, progressive and regressive. Every form of learning and evolution is based on the transformations of noise into information, and the development of any knowledge is correspondingly based on drawing order upon the substrate of chaotically organized and unknown. According to the thesis proposed herein, the incentives for evolutionary advancements and the ‘joy of living’ are present not in the procedures of finding, concluding and finalizing, but in endless searching, precluding and widening of the cognitive perspectives. For, ‘the more thou searchest, the more thou shalt marvel’ (Esdras II 4:26). Numerous Biblical narratives, including the story of St. Paul’s conversion on the road to Damascus, the book of Job, the stories of Babylonian tower and the city of Enoch may illustrate such a need for uncertainties, horizons and the fields of unknown to partly take the place of unnatural and rigid over-certainties in the domain of human knowledge until a fruitful, driving balance between the two becomes reached. The free will of cognitive guidance and conduct of

actions, the inherent indeterminism, the probabilistic character and the overwhelming complexity of natural phenomena, and the co-creational nature of experiential qualities, therefore, go hand-in-hand on the road to cultivation and evolution of the sacred values of life and humanity. Wisdom flourishes upon the foundations of carefulness towards natural systems that could not be predicted and controlled⁵⁷, as is the case with both individual living creatures and the whole Nature. An inability to observe a true and objective nature of any real system presents the ‘fuel’ that drives the wheels of emergence of new holistic qualities⁵⁸ and new levels of organizational complexity in the evolution of life; for, searching, and not merely finding is the purpose of living. ‘The essence of philosophy is seeking the truth, and not its possessing...To deal with philosophy means to be on a way’⁵⁹, Karl Jaspers claimed, whereas Emerson thought that ‘a fact is the end or last issue of spirit’⁹, and Henry David Thoreau wrote that ‘the highest that we can attain to is not Knowledge, but Sympathy with Intelligence. I do not know that this higher knowledge amounts to anything more definite than a novel and grand surprise on a sudden revelation of the insufficiency of all that we called Knowledge before – a discovery that there are more things in heaven and earth than are dreamed of in our philosophy. It is the lighting up of the mist by the sun’⁶⁰.

On the opposite side from both objectivistic and solipsistic attitudes that imply the subject’s domination and manipulation over the environment are positioned some of the ancient religious norms that may be neatly illustrated by the following Buddhist story⁶¹. In it, a barefooted monk faces a rugged and spiky terrain that he has to cross. He thinks of two possible choices: paving the way with a smooth surface or making himself a pair of sandals. As we all know, he opts for the latter way. But instead of the tendencies to either dominate and conquer Nature and submit other people to subjective rules or passively renounce attempts to beautify the lives of fellow beings, the co-creational thesis implies an implicit invitation to meet our own nature and revise it according to ancient religious norms as much as to creatively change and improve ‘the world around’. ‘Seek ye me, and ye shall live...Woe unto you that desire the day of the Lord! To what end is it for you? The day of the Lord is darkness, and not light’ (Amos 5:4-18), has in the following sense been recorded as a divine message to human seekers. On the other side, the more one becomes preoccupied with causing merely one’s own enlightenment, the more one also becomes ‘immersed in darkness’, whereas living for others coupled with wise and vigilant reevaluations of ethico-aesthetical foundations of the subjective patterns of reasoning and behaving, may present the ultimate key to one’s enlightenment. Battling against the environment with the purpose of increasing the subject’s short-term opportunities for survival and self-satisfaction (which might be distinguished as an elementary drive underneath the current competitive nature of economic development) may result in the destruction of the essential threads of the environment, without whom the very subject might become extinguished in the end. The only possible route for a sustainable evolution is, therefore, a mutual evolution of the being and its environment. As a result, instead of objects and substantial entities, it is only patterns composed out of complex relationships that may present the evolutionary ‘units of survival’. ‘The one who has become great, does not find valuable becoming great’³⁴, as Chuang-tzu noticed, whereas the words of Jesus Christ may similarly accentuate the need for a careful orientation towards the foundations of one’s knowledge and action that spontaneously give rise to fruitful results of one’s existence: ‘He is like a man which built an house, and digged deep, and laid the foundation on a rock: and when the flood arose, the stream beat vehemently upon that house, and could not shake it: for it was founded upon a rock’ (Luke 6:48).

Revision of constructivist and realistic theses and their merging into the Middle Way concept of co-creation of experiential qualities

‘Chiaroscuro is all very well, but William Blake tells us firmly that wise men see outlines and therefore they draw them’

Gregory Bateson, *Mind and Nature*

So far we have seen that constructivist/idealistic aspect of the co-creational formation of experiences implies that both perceptive and abstract elements of one’s experience stem from the subject’s cognitive roots, so that devotions to reevaluating, cultivating and sustaining the epistemological foundations - that besides basic logical assumptions comprise deeply ingrained values, aspirations and desires - in a bright and ethical light, presents the way towards improving one’s comprehension of the natural order. However, the realistic character of the co-creation of experiential qualities on the other side prevents us from being caught in the ‘whirlpools’ of solipsistic worldviews that may naturally follow from idealistic or radical constructivist epistemological assumptions. The extreme idealistic and realistic standpoints that respectively correspond to pure solipsism and passive representationalism, therefore, become merged into the dynamic subjective/objective balance of the co-creational formation of experiences.

Accepting both realistic and idealistic nature of experiential origins may favorably increase the level of the subjects’ responsibility for the qualitative patterns co-created in perceptive, reflective and behavioral domains. The fact that the cognitive results of the biological activity of a single organism are neither completely incompatible with the experience of others in their idealistic subjectivity nor entirely identical with and reducible to the experience of others in their realistic objectivity supports the proposition of the realistico-idealistic Middle Way of the experiential co-creation. However, whereas uniqueness and individuality of experiences present a ‘taboo’ topic in the objectivistic frameworks of thought, the existence of common and ‘shareable’ experiences presents a mystery of a similar scope for the solipsistic frameworks of reasoning. Thereupon, whereas the objectivistic standpoints have naturally instigated individual quests for ‘self-identity’, originality and specialness, radical constructivist standpoints have required an introduction of metaphysical reasons which would account for the existence of common and compatible experiences. Immanuel Kant’s categorical imperative, the principle of relativity⁶² (according to which a scientific hypothesis becomes instantly refuted if it becomes proven as invalid for two mutual events, despite the fact that it may be valid in describing each one of the separate events; an encounter of two solipsistic cognitive systems would thus be shown as improbable, and the anarchistic ‘battles’ of pure idealistic stances prevented), Heinz von Foerster’s identification of reality with togetherness^{63,64}, Ranulph Glanville’s ethico-aesthetical imperative according to which one ought to aspire to give more than one has or asks in return⁶⁵, a metaphysical Love⁴⁸ and the Golden rule of Christianity have been correspondingly invoked in order to overcome the potential dangers of solipsism, inevitably dormant in constructivist worldviews.

In relation to the cultivation of aspirations to get rid of solipsistic tendencies at the root of the constructivist thinking, the following Zen story may be recalled⁶⁶. A Zen disciple wondered about the position of a nearby stone within the order of the Universe. Approaching his teacher, the disciple offers a possible answer in spirit of the idealistic teaching by asserting: ‘It should be in my head; for the whole world is an objectivization of the mind’. The teacher, however, replies: ‘Your head must be a heavy one; for you carry a whole stone with you everywhere you go’. From the co-creational point of view, the stone would have presented a perceptual product of an

interplay between mind and Nature in their co-creative evolutionary interaction. Idealistico-constructivist attitude according to which the qualities of the stone become constructed by the perceptual and interpretational foundations of one's being presents, therefore, only one side of the co-creational organization of experiences. Its other side corresponds to realistico-objectivistic side of experiential origins, which can correct the autistic imbalance of solipsistic attitudes by invoking one's attentiveness towards the social character of experience, i.e., experiential aspects governed by benevolent quests for common meanings, sharing of experiences and an implicit togetherness. The sense of responsibility that emanates from knowing that our deepest values and holistic (so-called 'inner') qualities outline and guide the cognitive processes invigorates the stable roots of the co-creational organization of our experiences, whereby ethico-aesthetical attitudes of giving, 'stretching hands' and devoting our deeds to joy and happiness of others fosters an eventual blossoming and fructification of the effects of our creativity.

However, finding the right balance between a responsible 'constructivist' placing of the referential center for all of one's ideas, propositions and expressions right at the epistemological and ontological core of one's being, and empathic 'realistic' devotion to observing 'the world from the eyes of the others' presents a hard, but not an impossible task that will be in more details discussed in the last section of this chapter. At this point we can only note how truly enlightening actions responsibly and implicitly refer to the cognitive core of one's being, but point towards the beauty and significance of the others. For, 'if I honour myself, my honour is nothing' (John 8:54), as the words of Jesus Christ remind us. The inherent drives of human actions and of the co-creation of perceptual and reasoning patterns of the experiential worlds need to be always 'facing' others, and as such present the ultimate 'patterns that connect' living creatures across the intricate vastness of the Universe. The classical, objectivistic approach to studying 'natural' phenomena and the modern, constructivist approach to organizing 'experiential' phenomena could be, therefore, considered as complementary aspects of an ultimate general framework for describing and managing experiential realities, whereby only in their Yin-Yang dance of their mutual support may hide the way for a continued evolution of the planetary consciousness.

A reference to Ernst von Glasersfeld's example of observing celestial constellations as an illustration of the radical constructivist thesis⁶⁷ will be drawn as a conclusion to this section. In this example, a being wonders beneath the sky interspersed with stars about their and the observer's origins, purpose and evolution. Whereas from the constructivist point of view the appearance of a specific constellation depends on subjectively performed perceptual operations during the process of observing, from the realistic point of view the appearance of the constellation is also dependent on the objective standpoint which the observer occupies in relation to the celestial order of the Universe. Whereas the subjective aspect of the experiential co-creation implies that each specific biological structure gives rise to unique experiential qualities, the realistic aspect of the experiential co-creation implies that each specific observational perspective additionally limits the space of possible perceptually constructible patterns.

Perception itself presents an active construction of subjectively stable qualitative patterns in reference to which one can viably coordinate experiences. Then, the subject's shifts of attention present a second-order element of the experiential construction through which one organizes the primarily formed perceptive boundaries into meaningful forms and objects of his experience. This attention can be more literally presented not as a beacon that shines a light on objectively existing forms, but as a neural pulse focused on sensory differences. Conscious

character of the shifts of attention may be evidenced by the so-called ‘cocktail-effect’¹, which accounts for the fact that surrounded by numerous conversations at a party, one can by reflective flips of attention pick the one he is interested in. These shifts of attention are determined by the complete subject’s history of inner processes and structurally coupled interactions with the environment. They are also evidently guided by the subject’s intentions, anticipations, aspirations and values. By means of an active and dynamic redirection of attention along perceptual differences, one constructs individual stars and their celestial patterns. Also, in order to perceive the plural character of a stellar constellation, one needs to be capable of reflecting on the similarity of the perceived starry forms, which implies a partial awareness of one’s own cognitive operations and the existence of ‘self’ thereupon.

Primary perceptual qualities in terms of raw experiential differences are thus being co-created, whereas the interpretational construction of the objects of one’s experiential reality may be seen as arising from the similar interplay between the subjective activity of selecting and the previously co-created perceptive outlines that guide one’s inner processes of organization of experiences along the line of spontaneous perceptual categorization and reflective thought. Every detail and aspect of one’s experience may be, therefore, regarded as a dialogue between mind and Nature, and such an enlightening proposition may present a starting point in bridging the traditional gap between the disciplines inclined to emphasizing either subjective or objective aspects of experience. Through such a perspective, the subject can in the idealistic/constructivist spirit regard every detail of the world of his experience as verily himself, and *vice versa*: in the realistic spirit, the patterns of the ‘hidden reality’ could be regarded as inherently ingrained within every aspect of the subject’s cognition (which can be additionally witnessed by the fact that the similar patterns of fractal nature pervade the Universe at all scales). The subject outlines the starry patterns, and the starry patterns outline his being. Every detail of the subject’s experience presents a way that leads him to face not only the reflections of his own understanding of the essence of being, but the providential reflections of the divine ontological essence of Nature as well. Two elementary principles of radical constructivism (‘knowledge is not passively received, but actively built up by the cognizing subject’, and ‘the function of cognition is adaptive and serves the organization of the experiential world, not the discovery of ontological reality’²) may, therefore, be enriched in favor of a more significant role of ‘hidden’ ontological organization of the world in the processes of co-creation of one’s experiences. ‘The stars are beautiful because of a flower that cannot be seen’³⁶, the Little Prince once observed, reminding us that the foundations of our observations, interpretations and reasoning present a ‘hidden guide’ of the experiential organization, whereas on the other hand, a ‘hidden guiding force’ of divine Nature also manifests itself in every detail of the being’s co-created experiential world. The outcomes of their endless co-creational communication may incessantly point to the ways of beauty and harmony in an endless story of the spiritual evolution of cognitive beings, proceeding through cultivations of inner aspirations to become and endow others with some similar starry sources of planetary life, and shining with light that arises from a deep meditative inwardnesses and spreads to the world without asking for anything in return.

If anyone asks now about ‘where the stars that we see are’, we may become deeply pondered and recall that whereas from an objectivistic point of view, the correct answer would be: ‘In the sky’, the constructivist response might be: ‘In you’. But from our co-creational perspective, an answer which says: ‘On the way that connects the hidden foundations of Nature and you’, may be presented as a support for numerous succeeding, both fruitful and wondering moments of contemplation.

Part II. Application

‘The essence of knowledge is, once you
have it, apply it’

Confucius

Circularity and mutuality as immanent in the concept of the Way

‘The Sun don’t go down,
It’s just an illusion caused
By the world spinning ‘round’

Wayne Coyne, *Do You Realize*

In accordance with this contemplation, the proposed co-creational nature of experiences implies that every communicational pathway, irrespective of its complexity scale, presents an act of co-creation permeated by bidirectional causal interactions and transformational mutuality. Whenever one observes hypothesized linear, unidirectional and chain-like causal interactions, one may eventually realize that such models are at best pragmatic approximations aimed for representing specific experiential relationships in form of analytically solvable equations; in reality, however, those relationships always present circular causal interactions and nonlinear phenomena. For example, if anyone proposes that it is the ‘spirit’ of the current era that gives rise to actual human expressions, values and behavioral patterns, a reasonable response would be: ‘Yes, but it is the individual creative efforts that also give rise to the ‘spirit’ of the current social era’. Or if someone proposes that it is the inherent and cultivated human values that define the qualities of human creative achievements, a reasonable response would again be: ‘Yes, but it is the qualities of human deeds that partly shape the inherent values of individual beings’. And so on.

However, linearization of experiential/natural nonlinear phenomena has become such a ubiquitous practice in scientific simulations⁶⁸ that many young scientists nowadays erroneously believe that all natural relationships might be perfectly represented by linear equations. It becomes forgotten that even the famous Einstein’s equation ‘ $E = mc^2$ ’ was derived after omitting an infinite number of its nonlinear terms in the process of its linearization⁶⁹. Therefore, instead of invoking experientially observed phenomena in their thorough complexity, small and harmonic oscillations, waves of small amplitudes in homogeneous environments, small temperature gradients and atoms as incompressible spheres become employed with the purpose of representing the given phenomena in terms of analytically solvable, linear models. Also, whereas linearized scientific models are based on postulated unidirectional dependencies between the limiting conditions and specific variables of the model, in real circumstances a modification of a single systemic variable affects all the others, so that in the case of complex natural systems it becomes impossible to control all the inherent correlations without drastic simplifications of the investigated models through the introduction of approximations related to neglecting the inter-variable interactions. At this point, it can be noted that the linearity of quantum theory has been adopted on the account of introducing the infinite-dimensional space, whereby each finite-dimensional nonlinear model can be routinely transformed into an infinite-dimensional linear model.

The ideas of linear causality may be traced back to Aristotle who postulated that ‘we regard our knowledge as complete only if we know the initial cause’, and through such an

assumption established the foundations of logic. However, the historical refinement of human knowledge brought about transitions from pragmatically over-linearized models of physical systems to the ones that invoke interdependent variables and circular causal arrangements, as can be exemplified by a few paradigmatic shifts during the history of science. Aristotle's general theory of movement (that in its derivative form corresponds to Newton's law of inertia) was replaced by Newton's law of reciprocal action that emphasized not unilateral, but mutual action of objects in contact. Independence of space and time on object (i.e., mass) movements in Newton's classical physics was replaced by the dependence of space and time coordinates on the observer's position in Einstein's special theory of relativity. However, the definition of space-time coordinates affected by the presence of mass in the latter theory was replaced by the mutual effects within mass (energy) – space-time relationship through introducing the concept of space-time 'warping' in the presence of mass (so that modified geometries of space-time define new trajectories for the mass movement). Numerous other fields of scientific research nowadays witness transitions from applying more reductionist, hierarchical models of investigated systems to acknowledging more holistic, multi-hierarchical causalities that extend throughout all the organization levels of the given systems.

The problem of 'chicken and egg' can, in fact, exist only in the frameworks of reasoning pervaded by the neo-Aristotelian idea that if one traces experiential relationships back enough in time, one would eventually come to the initial cause of their experiential origins. This approach comprises the basic teleological problem of linearized worldviews, which can be evidenced as an impossibility to apply the standard logic in explaining the functions of the simplest cybernetic, feedback loops without generating obvious paradoxes. As a matter of fact, by observing any control loop, the definition of its 'controlling' and 'controlled' parts would present an arbitrary choice of the observer⁷⁰. If we watch an acrobat in the act of orange juggling, we may ask whether it is him controlling the oranges or it is the oranges controlling him. Control in terms of imposing constraints over the system's behavior is always dual, so that a necessary precondition of controlling the controlled is to let the controlled control the controlling system in the reciprocal amount^{47,70}. Both the famous Juvenal's question '*Quis custodiet ipsos custodes?*' and Bertrand Russel's paradox may therefore exist as insolvable intricacies only in the frameworks of reasoning that rely on employing linear causal relationships as explanatory bases. As a correlation to this, Ranulph Glanville proposes a joke: 'The class Skinner was lecturing to decided to smile when he moved to the right and frown when he looked to the left, while lecturing. He ended up standing in the rightmost corner. But the students also had frozen grins on their faces. The control was mutual and interactive, and as unlike Skinner's behavioural model as you can get until you ask the question about why the rats running the maze correctly make the scientists smile'⁷⁰. The observation that an increased level of 'mastery' over natural events and an engagement in the pragmatic redirection of their flow towards human 'millwheels' leads to both an increased disciplining of human beings at all existential aspects and an increased level of 'slavery' in relation to the same controlled natural phenomena (manifested as diverse attachments to those partly self-imposed environmental constraints), may be naturally inferred thereupon.

Even in the case of a thermostat – as simple cybernetic circuit as it can get - an observer cannot tell for sure whether it is the thermostat causing the work of the heating/cooling system that maintains the stable temperature in a given environment, or it is the temperature causing the work of the thermostat. A reply to Chuang-tzu's question, 'Is it the clouds that make the rain or it is the rain that makes clouds'³⁴, may comprise pointing to circular ecosystemic causality wherein

the clouds form rain, but the rain forms clouds as well, similarly to humans forming their deeds and values that indeed make humans in a wider existential context. The building atomic elements of life are in the constant state of circulating between atmosphere, oceans, biological structures, rocks and sediments of the biospheric planetary whole⁷¹, whereas as far as the social aspects of the eco-science are considered, John Kenneth Galbraith has written that all ‘economic life, as always, is a matrix where the result becomes a cause and the cause becomes a result’⁷².

Cognitive beings have arisen from the foundations of Nature, which has provided ontological constraints and drawn the limits to their rationalization and comprehension capacities, whereas human deeds in terms of tools, technologies and shaped communications modify the ‘Nature’ as humans see it. Human actions influence human reasoning and *vice versa*. For example, human reasoning in relation with the natural constraints co-creates sciences and technologies, which through stretching the existing and opening new spaces of options present environmental stimuli that are included in the co-creation of new thinking patterns and creative tools in relation with the other, subjective co-creational side that belongs to human cognitive foundations. For instance, stone carving tools, a chalkboard, a fountain-pen, a typing machine and a computer text-processing software (with the revolutionary facility of erasing and copy-pasting) stimulate specific writing skills, trends in expressions, and compositional pathways for the linguistic ‘sculpturing’ of ideas⁷³. Also, each form of human thinking has blossomed upon the soil of a specific social tradition, and as such can be visualized as a part of the hermeneutic circle⁷⁴ wherein the social grounds of one’s abstract concepts applied to comprehend experiential phenomena present one, and the subjective aspect of the internal construction and re-interpretation of these concepts presents another co-creational side, which results in subjectively unique and yet ‘objectively shareable’ interpretations that may enrich the thinking patterns of others and further build the tradition of social knowledge. Through such an understanding of the potential existence of enlightening ‘configurations’ of experiential interpretations and the evolutionary prosperity of humans only within a pre-given social context, end points of the imperative chain of Arne Naess’ Ecosophy-T, ‘Self-realization! - Self-realization for all beings! – Diversity of life! – Complexity! – Symbiosis!’ can be interlocked into a single circular chain. Circular causality in the domain of biology of consciousness can be acknowledged not only through the observation that physical structure of the subject co-creates its thoughts and emotions, whereas the latter co-create its physical structure⁷⁵, but in the mutual, feedback interaction between abstract reflections and direct perceptual experiences as well. For, whereas experience (immersed in social interaction media) poses limiting conditions for the reflective construction of its ‘maps’, by investigating the latter models one can discern pathways for research of novel details on the ‘territory’ of direct perceptual experiences, which may lead to the creation of novel maps with the directions towards enriched experiences and horizons that initiate novel and more profound quests for knowledge. Hindu and neo-Hegelian ontological representations of the world have depicted it as reflection of the divine qualities of Nature (as one co-creational side in the emanation of every detail and aspect of one’s experiential world) in the eyes of wondering beings (as the other co-creational side) that behold eternal beauty and sources of divinity in every detail of the world, which exists for the sake of living beings that mirror the divine beauty of Nature. ‘God had become man in order for the man to become God’⁷⁶, Athanasius of Alexandria observed, in accordance with the Biblical record of ‘God’s words’⁴⁴: ‘I am who I am (i.e., I become what I become)’ (Exodus 3:14), pointing to an endless process of becoming and evolution of Nature, and not finding and concluding, but searching and pre-luding as the paths that lead to glimpses of an ultimate meaning and beauty of existence.

Whereas in the world of mechanics, Newton's law of action and reaction may illustrate the fundamental principle of change according to which it becomes impossible to exert an impulse on a body without the body exerting the equal force in the opposite direction, in the biological domains autopoietic features of living organisms and their ecosystemic 'hives' present an evidence in favor of their inherent circular organizations wherein each entity, irrespective of its complexity and size (i.e., molecules, organelles, cells, tissues, organs, organisms, communities, ecosystems), has the function of creating all the other entities⁴⁸. Due to its inherent self-production character, every living form presents a giant harmony of processes in which there is no distinction between the 'creator' and the 'created', as well as between the actions of existing, acting, cognizing, learning and creating. A cognitive subject's attempts to comprehend such systems may be regarded as a dizzying 'application of an instrument of analysis to analyze the instrument of analysis'⁴⁸, whereas Gödel's theorem may have already pointed one to the fact that 'if human mind would be simple enough to be understood, then it would be too simple to understand it'⁷. Stepping out of the whirling perceptions based on solipsistic self-referring, and into the readiness to observe 'mysterious' reflections of one's aspirations and the deepest, directly invisible qualities as the bases of one, subjective co-creational side of the experience formation from the other, divine co-creational force of Nature, and engaging one's creativity in dialogues and relationships with attempts to maintain the subtle balance between referring to the foundations of subjective epistemological attitudes and the realistic sharing of experiences, presents the way to engage one's being in endless self-realizing evolutionary cycles.

Whereas linear and single-variable models of natural phenomena may give rise to the norms of conduct established in accordance with the ideals of maximization and 'grow big fast' strategies, only optimization-guided attitudes can in reality present simultaneously sustainable and evolutionary paths of development. Monotonous and context-independent values do not exist in the biological world, whereas the tendencies towards linear maximization normally become reflected in an increased rigidity of the system's performance and decreased susceptibility and adaptivity towards environmental stimuli. Systems analyses have shown that economic projects guided by maximization ideals can provide long-term viable and sustainable effects only in rare circumstances when an array of systemic variables coincides in giving a set of convenient outcomes⁷⁷. Game theory models may provide a large body of evidence that the tendencies to reach solutions in a quick and bustling manner, irrespective of their harmonious and prosperous character, can lead to long-term disharmonies and misunderstandings⁷⁸, so that even the balance between a growing harmony and a reigning disharmony needs to be maintained in the framework of sustainable and globally prosperous management, despite usual tendencies to bring forth harmony and enlightenment to the areas of strife and ignorance in a fastest possible way. Interference of a multitude of circular relationships provides unsurpassable obstacles to modeling attempts, as can be exemplified by the hypothetical case according to which even if a perfect, zero-waste ecological environment would be created, anthropomorphic influences manifested as pure variations in the rate of renewable utilization of ecosystemic resources could create unpredictable effects on the resulting behavior of the individual ecosystemic wholes and the eco-patterns of the whole biosphere. Predictable and surprising, repeatable and renewing character - in a sense that 'inside every white box there are two black boxes trying to get out'⁷⁹, as Ranulph Glanville observed - typifies all natural appearances and presents the drive for a continual redrawing of the limits and horizons of the human co-creation of perceptual and abstract experiences.

The relation between linear and unilateral, and nonlinear and bidirectional interactions can be analogously interpreted as a relation between irresponsibility and responsibility of human interactions with the corresponding environments. Every form of fine perceptual coordination and learning behavior is based not on inert performances that follow pre-established rules of conduct, but on cultivating sensitivity towards feedback impulses of the environment upon the subject's subtlest actions and reasoning patterns⁸⁰, and an openness to revise and improvise preconceived expressions. In order to become a successful dribbler, a soccer player needs to conduct his movements in relation to the gestures of an opposing player. Exceptional educational, lecturing and management approaches are, likewise, based not on 'blind' following of preconceived guidelines, but on instigating one's feedback sensitivity to responses from the other sides in the interaction and accordingly correlating one's expressions. The idea that learning presents not a passive absorption of environmental stimuli and unilateral, 'training' modifications, but 'co-evolutionary' changes of the being and its environment altogether, may be evidenced by recognizing such action-experience feedback sensitivity as inherent in the essence of every learning procedure.

A material structure typically receives the attribute of either an organism or an active device component when its behavior in terms of the inherent relations and the relationship between input and output signals becomes nonlinear. Systemic and cybernetic descriptions of biological entities and natural phenomena in terms of relationships (with the inherent indeterminacies and unpredictabilities) are nowadays becoming merged with their 'substantial' representations in terms of fixed, permanent and localized entities that are only through structural dissipation and metabolic exchange of energy in contact with their environments. The presumed independence of physical particles has been shown as illusory from the quantum perspective, and in the quantum field theory particles are represented as quantized states of the field that extends throughout the whole space. As quantum descriptions of atomic entities in terms of relations that figure between the hypothesized entities and their environments have been regularly replacing the classical representations of atoms as entities that are isolated, autonomous and independent of the context of their existence, neither can the living beings be seen anymore as isolated bodies describable by René Descartes' definition of substance as 'a being that so exists as to require nothing else for its existence', but as harmonies of interactions spread between them and the rest of the world, so that it can become clear that human beings do not possess their values, aspirations and emotions, but they are them⁸¹. Instead of experiencing one's subtle thoughts, desires and feelings as 'screams suffocated by darkness', one may reasonably regard that 'the universe is like a dome: it vibrates to that which you say in it, and echoes the same back to you; so also is the law of action: we reap what we sow'⁸², as Inayat Khan observed, as well as be reminded that 'among the appliances to transform the people, sound and appearances are but trivial influences...the superior man being sincere and reverential, the whole world is conducted to a state of happy tranquility'⁸³, as Confucius thought. Also, similar to musical chords that present more than the sum of individual tones that compose them, the richness of the relational character and holistic nature of all the natural systems and experiential phenomena develop in parallel.

One of the significant ethical and developmental implications of the fact that all experiential qualities and, correspondingly, all natural interactive phenomena and types of communication may be regarded as reflections of a 'way', is that the willingness to continually change and mutually transform presents an attitude that provides the basis for participating in any prosperous worldly communication. Every process of curious, openhearted and learning

encounter with others is pervaded by one's readiness to change and modify oneself. 'If you want to find yourself, change!'⁸⁴, has correspondingly been Heinz von Foerster's imperative, whereas Heraclitus' norm was that 'through its changing, the world as One becomes sustained'⁸⁵. The co-creational character manifested in form of mutual changing in any social interaction of values, worldviews, self-imposing constraints and meanings presents the way of communication that carries wide potential benefits compared to unilateral, controllable and manipulative interactions where the sides in interaction are resistant to change.

The behaviorist approach which justifies manipulative attitudes and educational conditioning wherein the 'teaching' system influences and controls the 'taught' system in a unidirectional manner can be disregarded in face of the cybernetic principle of requisite variety^{86,87} which states that the system of a lower complexity could not control the system of a higher complexity. Autopoietic perspective according to which living beings present feedback-permeated, self-organizing and operationally closed systems, and as such autonomously create their own experiential worlds in accordance with the raw perceptual differences that arise at the interface between their biological structures and the corresponding environments, presents a general basis for accepting the process of co-modification, co-learning and co-evolution as the inherent process of any biological and physical communication. It seems, therefore, that all the effective educational approaches are based on the willingness of not only 'taught', but of the 'teaching' side as well to change.

Significant differences between the ethical approaches inherent in Christian and Buddhist theologies have already been mentioned⁸⁸. Namely, whereas the Christian concept of 'love' may be understood as a representation of a force that changes the world while maintaining the constancy of qualities of the 'forcing' side, the Buddhist 'empathy' may be regarded as a humble productive force that is inwardly oriented towards changing and improving the very subject and, thereupon, quietly and spontaneously, the whole nature. 'Buddhas could only point out the way', Gautama Buddha said, whereas healings and 'moving the mountains' were part of the divine revelation of the Christ's teaching. Anyhow, extreme attitudes that correspond to meditative inwardness and renunciation of the world (and searching for the ultimate 'treasures' within) on one side, and 'blindness' by the features of 'external world' (that initiates endless searches for the 'treasures' of life that are always 'somewhere else') on the other, are thus through the co-creational Middle Way led to the same source wherein every treasure is acknowledged as arising via relations between the subject and its environment in physical, social and ecological frames, mind and Nature in metaphysical frames, and soul and God in theological frames. Although a similar dichotomy may be found in the relation between Taoism and Confucianism, in a dialogue recorded by Chuang-tzu, Confucius observed: 'For a long time I have not occupied the place of a being that keeps abreast with the process of changes. But if I myself do not behave in accordance with the process of changes, how can I hope to change other beings?' 'Bravo Chiu, now you know', allegedly replied Lao-tzu³⁴.

Whereas the attitudes of faith can be applied in relation only to uncertain aspects of one's experiential development, and as such can exist only in cognitive domains where the tendencies to reach final proofs, conclusive evidences and ending summaries are partly discarded on the account of developing a mindset guided by a never-ending adventurous quest for knowledge and the corresponding readiness to continuously evolve and change, a direct correlation between a true religiousness and the questioning and wondering 'frame of mind' can be proposed. The blossoming of Christian love is also inherently related to one's openness to change, as much as sincere prayers are conditioned by one's receptiveness to fundamental cognitive 'turnovers' in

the acts of ‘forgiving’, mutually directed to others and oneself. Such inquiring and wondrous cognitive standpoints may be, thereupon, proposed as another essential thread that links the realms of science and religion. However, as has previously been notified, any inquiring attitude necessarily rests on a balance between firm ‘leaning’ of one’s reason upon premised ideas that cannot be empirically derived and one’s receptiveness in absorbing novel influences and perturbing one’s biophysical and conceptual settings, so that the more diversified and enriched one’s explanatory framework is, the more opportunities there should be for questioning and experimenting on their bases, and *vice versa*. For it is through learning of and adopting diverse experiential perspectives that the potential for healthy development of one’s own conceptual framework used for explaining experiential phenomena becomes increased, and *vice versa*.

Besides the fact that there can be neither an ‘observer’ without an ‘observed’ (i.e., living without cognizing) nor an ‘observed’ without an ‘observer’ (i.e., objective observation), each observation process implies mutual transformations of both the observing and the observed system. Devastating effects of disregarding environmental responses upon one’s actions can be evidenced by an observation that the social transition from invention and small-scale application of originally bidirectional radio-communications to their massive implementation in form of single-directional information media marked the following decades with a worldwide proliferation of numerous dictatorial regimes. In that sense, the actual emphases on entities, nouns, monologues and amphitheatric one-to-many lectures, unilateral interactions and unidirectional communication media should in certain extent cede their places to feedback-pronounced, participatory and ‘open-source’ communications, as well as to relations, facings, encounters, meetings, verbs, dialogues, round-tables and mutual interactions in order to restore the fruitful unidirectional/bidirectional balance within the contemporary societies. However, in such balancing attempts there always lies an imminent risk of swinging the tackled imbalance to its opposite side, which would in this case correspond to an excessive decentralization of communications, and as such may be reflected in an increased level of disorganizing interference of the multitude of ideas and worldviews. Identical risks of either an exclusionary ignorance towards novel and paradigmatically unfitting ideas in the social organizations whose cognitive members are connected by the objectivistic bases for organization of experiences and their ‘exchange’, or a potential anarchism in the subjectivistic society permeated by the ideals of erasing all common and ‘objective’ criteria for the evaluation of relevancy of ideas and worldviews, are immanent in attempts to balance realistic and idealistic aspects of individual experiences that govern the dialectical evolution of knowledge at the social level.

In that sense, it may be recalled that it is not only that linearity presents an essential aspect of every advancing and evolutionary process, but through its association with an irreversible quality of time it may be said to comprise an essential aspect of every natural and experiential interaction. The irreversible character of thermodynamic phenomena, inherent in the physical substrate of experiential reality, implies partially unidirectional character of the evolution of physical systems, manifested through their ‘arrow of time’ dimension. As the movements of walking forward combine circular, cycling movements of feet and the linearly directed propulsion of the body’s center of gravity, the evolution of life and cognition is marked by their spiral character that combines assimilative periodicities and seeking novelties, as well as ‘visions’ and ‘revisions’. Metaphor of the spiral with its character of simultaneous recurrence, yearning to ‘squat back’ to the central beginnings of its being and becoming, and ‘adventurous’ streaming forward to meet novel circumstances, ideas and challenges, may concordantly depict the balance between periodicity and novelty that pervades all experiential/natural phenomena at

various time and complexity scales. Whereas on one side Nature provides cognitive beings with essential ‘re-sources’, the beings are engaged in a continual ‘re-search’ that enables their survival and evolution, and correspondingly all natural, ecosystemic and cognitive phenomena are established on recurrent patterns that in always novel ways combine repeatable and novel aspects, so that the cognitive research and evolution can propagate immensely. ‘The sun also ariseth, and the sun goeth down, and hasteth to his place where he arose. The wind goeth toward the south, and turneth about unto the north; it whirleth about continually, and the wind returneth again according to his circuits. All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again’ (Ecclesiastes 1:5-7), Ecclesiastes observed, whereas Confucius noticed that ‘every day the sun shines with a new light, and rivers incessantly flow with new waters’⁸⁹. All human achievements as various forms of the all-pervading music of life may need to reflect such a balance between sustainability and evolution in every aspect of their creative efforts and results. In the sense of recalling such a linear/nonlinear balance, we may be again reminded of Chuang-tzu’s Taoist teaching of the ethics of tracing and drawing the optimal, Middle Ways with one’s existential and spontaneous ‘shining’ of relations of one’s being: ‘Tao is not choosing between this or that; it is moving along with all of them’³⁴.

Dialectical reflections of the concept of the Way

‘To those who think like us, things all dance themselves: they come and hold out the hand and laugh and flee - and return. Everything goeth, everything returneth; eternally rolleth the wheel of existence. Everything dieth, everything blossometh forth again; eternally runneth on the year of existence. Everything breaketh, everything is integrated anew; eternally buildeth itself the same house of existence. All things separate, all things again greet one another; eternally true to itself remaineth the ring of existence. Every moment beginneth existence, around every ‘Here’ rolleth the ball ‘There.’ The middle is everywhere. Crooked is the path of eternity’

Friedrich Nietzsche, *Thus Spake Zarathustra*

The relational character of all experiential qualities implies that each logical or linguistic emanation of knowledge will comprise implicit dichotomies. Also, circular causalities, shown as typical for all experiential relationships in the previous section, presented in terms of opposing and contradictory logical assertions comprise ‘mirroring’ dialectical confrontations wherefrom novel levels of understanding can be reached. When literally understood, such linguistic dichotomies are typically comprehended as pointing to an implicit separateness of ‘observer’ and the ‘observed’, and ‘controlling’ and the ‘controlled’, so that their subjective, arbitrary and inseparably mutual co-creational nature becomes disregarded on the account of cultivating ‘objective’ attitudes in their subsequent usage. However, all qualities in general comprise relations between certain polarities, and consequently all qualities imagined in the domain of abstract, reflective knowledge necessarily exist in forms of contrasts to their opposites. In that sense, Søren Kierkegaard observed that even ‘being a Christian is possible only contrary to something; when the contrast is diminished, being a Christian becomes nonsense’⁸⁸. Such a dialectical conflict of opposites that presents a necessary precondition for attaining novel synthesis pathways and evolutionary stages is reflected in numerous theological concepts,

whereas the most notable examples may be found in the Christian parables and Hindu imagery depicted in Bhagavad-Gita.

Dialectical approach to the enrichment of individual and social understanding of experiential reality, comprised of confronting perspectives, their constructive comparisons and arrivals at novel syntheses and worldviews and their comparisons at higher levels of organizational complexity, naturally emanates from the concept of the Way. Swami Vivekananda, whose name means ‘happiness in discerning’⁹⁰, stood in the defense of dialectical and confrontational verisimilitude of ideas by saying: ‘Any attempt to bring all humanity to one method of thinking in spiritual things has been a failure and always will be a failure...If you and I and all who are present here were to think exactly the same thoughts, there would be no thoughts for us to think. We know that two or more forces must come into collision in order to produce motion. It is the clash of thought, the differentiation of thought that awakes thought...Variation is the sign of life, and it must be there’⁹¹. Each perspective of comprehending the natural order in its entirety provides an essential complement to the sum of all other perspectives (as in the Hindu story of many people describing an elephant in the dark), and carries as much of insight into the ‘real’ order of things as it carries delusionary aspects that derive from its ‘blind spots’ that correspond to invisible assumptions and innate patterns of one’s observations and reasoning. Or as Charles West Churchman observed, ‘In the nature of systems is a continuing perception and deception, a continuing re-viewing of the world, of the whole system, and of its components. The essence of the systems approach, therefore, is confusion as well as enlightenment’⁹².

A recent game theory model has shown that the optimal way for the emanation of goodness and love in the world would necessarily be paved by hardship and misery⁹³. From the framework of systems science we know that a precondition for the existence of ‘something’ is the existence of ‘nothing’³, whereby the beauty of music and the twinkling stars is similarly conditioned by the moments of silence⁹⁴ and the dark interstellar spaces between. In one Sufi story⁹⁵ the sultan invited the best Chinese artists, trained in drawing paintings in vivid and lively colors, to ornament one wall of the interior of his palace, and Byzantine masters, trained in the art of polishing and producing perfectly clean and shining walls, to ornament the opposite wall. When the work was finished, a magnificent interior of the palace was revealed, for the two creative sides had been during the ornamentation *vis-à-vis* reflecting each other’s approach, meaning and beauty. Such a concept of development and evolution of natural systems through reflections of opposing qualities resembles the principle of the formation of a hologram. Namely, a hologram gets formed by an interfering comparison of two laser beams, one of which has the purpose of representing all the variations in luminescence, whereby the other provides a monotonous reference signal of the highest achievable levelness. Correspondingly, more pronounced differences giving rise to experiential phenomena lead to their clearer and brighter appearance. Therefore, maintaining the reference level of high purity and ‘nothingness’ through meditative attitudes on one side and learning to ‘draw’ ever finer and more diverse differences at ever subtler details of one’s experience through practicing attentiveness and a ‘wide-awake’ inquiry on the other, may thus present the complementary interaction that can lead us to embodying the Confucius’ ideal which states that ‘ordinary men wonder in front of extraordinary things, but wise men wonder in front of ordinary ones’. Implicit subject’s values may also be regarded as ‘standards’²¹ that provide selection criteria as ‘semi-guides’ of the processes of perceptual and reflective co-creation and interpretation of experiential phenomena, which

explains why in certain extent ‘we do not see the world the way that it is, but the way we are’, as the Talmudic saying goes.

Simultaneous separateness and connectedness, apartness and unity that the symbolism of the Way presents also corresponds to depicting experiential realities and ontological organization of the world in terms of an all-pervading music, arising from the incessant moving of natural entities ‘to and from’ each other, so that through alternations of the thetic aspirations to empathically unite and the antithetic tendencies to restore individuality and self-creativity, novel synthetic harmonies of knowledge, being and cognitive beauty are being produced. Ontological reflection of the proposed co-creational nature of experiences may, therefore, correspond to the neo-Hegelian, dialectical relationship between mind and Nature. According to it, divine Nature projects itself in the multitude of cognitive perspectives with the purpose of ‘observing its own beauty’. Holograms may be, therefore, due to their fractal nature according to which each part thereof structurally reflects the order of the whole, again employed as neat metaphors for describing both the ontological organization of the world and the experiential distribution of sources of potential cognitive enrichments^{96,97}. ‘Absolute spirit is the one who from eternal and self identical being becomes other to itself and that other recognizes as the very self’, were the words of Friedrich Hegel⁸⁵, according to which not only the Hubble space telescope⁹⁸, but sentient beings as well present, so to say, ‘eyes of the Universe’. In order to be able to observe, the world needs to divide itself to an ‘observer’ and an ‘observed’, which implies that every single perspective of this observation would be partial and incomplete. The origins of the multitude of beings, experiential perspectives and experiential time flow may be derived thereupon, whereas constant changes in perspectives and syntheses based on their complementarities present the avenues for avoiding permanent ‘blind spots’ of one’s reasoning and forming as complete and integral worldviews as possible. On the other hand, mutual causalities (as outlined in the previous section) and symmetrical divisions of experiential uniformities to complementary, mutually ‘mirroring’ sides with every cognitive distinction drawn and each corresponding informational enrichment of cognitive and natural landscapes, presents the key to explaining one’s ‘karmic’ finding of oneself in an experiential world that perfectly corresponds to one’s spiritual evolutionary stage and the actual cognitive attitudes, and sudden ‘revelations’ that ‘the whole world may indeed be the reflection of one’s spirit’⁹⁹. One’s experiential world may at each moment be realized as the only possible and ideal reflection of the spiritual essence of one’s being in the flow of their ‘structural coupling’, so that it can become clear that only through loving care and sincere devotion to ‘save’ and enlighten details and beings of one’s experiential world can one enlighten the spiritual and cognitive foundations of one’s being, and *vice versa*.

‘Structural coupling’ and co-evolution as preconditions for each evolution

‘O chestnut tree, great rooted blossomer,
Are you the leaf, the blossom or the bole?
O body swayed to music, O brightening glance,
How can we know the dancer from the dance?’
William Butler Yeats, *Among School Children*

The balance between the operational closeness and thermodynamic openness of all biological, cognitive systems may be acknowledged as a biophysical reflection of the proposed co-creational nature of experiences. While the operational closeness provides beings with the

capabilities to autonomously construct and interpret the perceptual differences co-created at the being/environment interface, the fact that they are thermodynamically open physical structures signifies the balancing interplay between a constructive openness to environmental stimuli and autonomous rearrangements of one's cognitive patterns as the key to sustainable living. In accordance with the postulated concept of the Way, evolution and learning occur in mutual, co-creational interactions of beings and their environments. The following discussion attempts to provide arguments for the pursuit of a giant leap from the evidenced co-creational nature of qualities in the domains of primary perceptions, abstract reflections and linguistic patterns of social communication to general stages of the evolution of life.

Despite an obvious need for referring to balances between autonomous and environmental creative aspects in any biological explanation of cognitive phenomena, the contemporary descriptions of organisms amazingly fluctuate between the extreme standpoints of a complete dependence of the being's learning and evolution on environmental conditions and a complete inherent self-guidance with disregard of any environmental factors of influence. For example, in the fields of psychology and physiology, living beings are typically represented through conditional, behavioristic models according to which 'human behavior is the function of environmental variables alone'⁴¹. On the other side, an essential independence of the being's development on environmental factors would correspond to the contemporary paradigm of genetic determinism, according to which the genetic code presents the sole determinant of the being's phenotype.

Each of these two extreme standpoints comprises apparent flaws. In contrast to the idea of linear, unidirectional and hierarchical spreading of information from the genetic code to the physical traits of an organism, a considerable amount of evidence can be provided in support of the circular exchange of information between all the cellular components. The simplest observation may be related to the fact that the cellular DNA presents a template for the synthesis of polypeptide and RNA molecules, whereas the latter ones are engaged in the maintenance and replication of the DNA sequence. Biological forms are not predetermined by the genetic code alone, but present emergent qualities of the whole epigenetic network of metabolic processes^{100,101}. Genetic constitution of an organism presents only a 'chain' in the complex network of interactions pervaded with iterative, circular correspondences¹⁰², and as such may be regarded as the basis for ontogenetic and phylogenetic epigenesis of the organism in terms of not strictly defining the pathways of epigenetic development, but providing conditions that determine the space of possibilities thereof. Phenotype is not the reflection of a partial expression of an inherent genotype, but a unique set of ever-changing qualities that is continually being recreated through an interplay between the inherent biological bases of one's development and environmental constraints and conditions¹⁰³. Investigating the characteristics of DNA sequences in isolation is for that reason not sufficient for providing the insights into always co-creational processes that outline the qualities of life, whereas shifts of the research emphasis to holistic epigenetic networks of processes and inner pathways of communication in correspondence with the environment have been presented as routes to improved comprehension of the origins and evolution of life.

Numerous discoveries from the fields of biochemistry and molecular biology, related to the mapping of the genetic code and the functional analyses of genome activity, have suggested that the key to understanding life cannot lie in genetic structure only or in any other single interactive side. Some of the results from the structural genome analyses include the facts that 98.5 % of human DNA is identical to that of chimpanzee, that 98 % is present in other

vertebrates, that humans and bacteria share hundreds of identical genes, and that rice genome possesses twice more genes than human genome. The results of various functional analyses have shown that the initial developmental potential of cells can be recreated in specific oocyte environments¹⁰⁴, that mother's genotype becomes expressed as its offspring's phenotype (so-called 'maternal effect'), and that some genes are typical of exhibiting multiple functionalities (including the example of a gene that presents template for the synthesis of two antagonistically confronted hormones: one that stimulates appetite, and the other that suppresses it¹⁰⁵). Numerous other epigenetic phenomena, including RNA interference and 'gene silencing' phenomenon, hereditary nature of epigenetic DNA methylation pathways and the phenomenon of reprogramming thereof, the effects of paramutation and transvection, the effects of translocation of genes on their expression, the mechanisms of gene imprinting, and the depictions of ever more significant roles of ever smaller DNA-related cellular components (e.g. transcription factors, chromosomal proteins including histones and their modifications, the role of microRNAs, silencing RNAs, etc.) in the expression of genotype, point to networked, iterative and holistic character of cellular processes. The propositions of multi-hierarchical networks of interactions as inherent to life have previously been supported by the exceptional regenerative abilities of embryos, as observed in Paul Weiss' research on embryonic development and the early experiments where embryos depleted by a few cells or genetic sequences in the early stages of their growth developed normally. Equifinality manifested through the existence of numerous ways that lead to identical final states, has previously been indicated as the basic feature of nonlinear and self-organizing living systems¹⁰⁶. The exceptional tolerance of mistakes in biological syntheses is overcome by a high selectivity for the final products^{107,108}, and may be described only through employing iterative, feedback-pronounced and self-correcting explanatory frameworks.

Instead of being a sole blueprint for all the emergent qualities of life, DNA may be regarded as evoking, but not defining ontogenesis of biological patterns of higher levels of complexity¹⁰⁹. The informational 'content' of DNA is not versatile enough to strictly specify all the neural patterns of the organism, so that only a redundant network of patterns (which enables 'unreliable' components to build 'reliable' outcomes¹¹⁰, as can be evidenced by the inherent imperfection of all biological syntheses, and the fact that numerous 'wrong' transcriptions of nucleotides during DNA replication only later become recognized and corrected by DNA-correcting enzymes¹⁰⁴) that becomes activated and continuously recreated during life (as evidenced by an observation that the repeating mental tasks are each time performed via different neural pathways), may be DNA-specified. The fact that human beings possess 10^5 times more synapses than receptors⁵ could support the idea that only differences and boundaries can be related to experiential qualities, so that the key to complexity of natural organizations consequently does not lie in the complexity of the individual components thereof, but in the complexity of patterns that they compose and continually recreate⁹³, as has been one of the major assumptions of the autopoietic framework for describing biological phenomena. The effect of synaptic summation⁶ which corresponds to an arrangement of neural pathways so as to perform operations of logical conjunction, presents another evidence in support of differences and comparisons as elementary features of experiential realities.

Despite the fact that one of the biggest 'truisms' of biochemistry and molecular biology is that 'structure defines function', it is nowadays becoming increasingly evident that knowing only the static structure of any biomolecule is insufficient for understanding and predicting its function¹¹¹. Qualitative essence and functionality of natural entities is from an ontological

perspective determined by a complex interplay between their inherent properties and the overall context of their interactive existence. Due to the holistic nature of such a network of relationships in relation with a corresponding environment, wherefrom all the inherent qualities of the system are being created, even though all the individual relations might be hypothetically mapped, they might not be enough for understanding and predicting the evolution of biological systems in time.

On the other hand, the idea that living beings could be manipulated by means of external influences may also be discarded on the basis of the fact that living beings are self-organizing systems that subjectively construct meanings (in accordance with the inherent physical structure) out of the perceptual differences co-created at the being/environment interface. It has been known from the field of anthropology that environment does not determine, but only conditions the appearance of cultural traits of its beings and communities¹⁰, whereas in the other direction, it may be claimed that individual actions could not present causes that may with absolute accuracy determine the features of the environment, but become incorporated in complex nonlinear networks of interactions where seemingly gigantic amplitudes of influences may be aligned and diminished in the course of time, and seemingly mild and negligible actions may be spontaneously amplified until presenting significant and widely dispersed effects.

Just as the shape of the aforementioned pebble is neither strictly determined solely by its inherent chemical composition and crystal symmetry nor merely by its physical surrounding, but has been continually formed in an interplay between the inherent potentials of the crystal growth and environmental circumstances, biological organizations present similar intersections of complex co-creational encounters of the influences of natural environment and the being's inherent potentials.

The major conclusion that can be derived from such a niche is that 'structural coupling' presents a necessary precondition for living, perceiving, cognizing, learning and evolving. Structural coupling is in the autopoietic framework defined as the history of interactions that leads to a structural congruence between either two or more living beings or a being and its environment, as well as the process that leads to a coincidence between changes in states of the respective congruent systems⁴⁸. Interaction between a being and its physical surrounding is always mutual, so that any living environment could be considered not as a static, all-absorbing and inert object space, but as a sensitive systemic space that changes in accordance with the subtlest transformations within one's cognitive domain. A crucial difference between robots that were designed so as to either passively adapt to a specific environment or insensitively perform the programmed tasks, and the living creatures that always co-modify and co-evolve in the co-creational interplay between the autonomous aspect of experiential construction and action management and the influence of also mutually changing environmental spurs (sources of stimuli), may be acknowledged from this point of view. Each evolution thus inherently presents a co-evolution¹¹². From this perspective, the co-creational nature of experience may be once again realized as a dance between minds and Nature, wherein beautiful harmonies between the reflective imitation and unities on one side and autonomous differences and individualities on the other ought to present an ideal of the most fruitful interaction between the two. An all-encompassing importance of such a balance between unity and diversity, imitation and originality, reflection and self-realization, and one and two, will be discussed in more details in the last section of this chapter.

As a consequence of the structural coupling, the history of interactions between a being and its environment becomes 'ingrained' in both the being's physical structure and its

environment, so that investigation and analogous descriptions of such a history of interactions ought to present the basis for explaining origins and co-evolution of the beings and their environment. Ontogenesis of an organism may be seen as an epigenetic flow of structural changes in the course of a continual co-evolutionary modification of the being and its environment. Any momentary structure of the being may be seen as a reflection of the complete history of interactions between the being's epigenetic network and its natural environment, which is equivalent to the 'structural flow'⁴⁸ of the realization of the being and Nature, and which presents the basis for the ontogenetic-phylogenetic correspondence between the dynamic structure of the being and its environment¹¹³. Modifications of biological structures merely at the level of the genetic code (that are according to the classical, neo-Darwinian concept assumed to present the basis for an evolutionary advancement) may not be sufficient to instigate evolution in terms of phenotypic changes within the organism, whereas changes at the level of the whole epigenetic network in which genetic sequences figure only as components, may be indicated as the key ones for accomplishing constructive redirecting life and cognition on the evolutionary roads¹¹³. Changes at the level of the relationship between mind and Nature (i.e., the beings and their environments) may present the initiations of constitutive genotypic modifications, so that the evolution of life can be seen neither as a unireational external design (corresponding to Neo-Lamarckian views according to which beings evolve by passively adapting to environmental constraints), nor as a unireational inherent development (corresponding to neo-Darwinian views according to which random genetic mutations initiate evolutionary advancements), but as an evolution of the 'way' that connects/separates mind and Nature. Relationships that wave between worldly beings and relations that present 'arms', 'bridges' or 'sun-rays' that the beings spread, build and shine between their epistemological foundations and the hidden, ontological features of their environments, present both the drives and the targets of co-evolutionary development and spiritual growth that may take place in parallel.

Gregory Bateson described the processes of evolution as perfectly analogous to the processes of learning, despite the fact that he objected to any proposed links between the two levels of organizational complexity¹¹⁴. Correspondingly, the shift from the ideas of unilateral effects of the external environments on their cognitive 'representations' (as corresponding to objectivistic attempts at explaining cognitive phenomena) to the proposed co-creational character of all aspects of experience may analogously correspond to the shift from a passive (i.e., 'objectivistic') adaptation of living creatures to environmental constraints to the idea of an active co-evolution of versatility and comprehensional potential of cognitive apparatuses on one co-creational side, and diversity of environmental boundaries and constraints on the other. Learning and evolution phenomena, therefore, do not proceed in linear directions, but arise from the co-creational interplay between the inherent self-organizing activity of beings and environmental constraints, and as such do not spread from either lower to higher complexity levels only (as in neo-Darwinian views) or *vice versa* (as in neo-Lamarckian views), but present circular, multi-hierarchical and feedback-permeated harmonies of relations that spontaneously evolve into ever more organized states.

One more analogy between evolutionary processes in the domains of reason and biology may be realized by invoking Seymour Papert's cognitive principle which states that 'some of the most crucial steps in mental growth are based not simply on acquiring new skills, but on acquiring new administrative ways to use what one already knows'¹¹⁵. This principle points to changes at the level of foundations of observing and comprehending experiential events as the key transitions in the evolution of both one's creative potentials and life. Evolution of life can,

therefore, be regarded as proceeding along the line of balance between the ‘external’ diversifying and complexifying the relationships of life and the ‘internal’ enlightening improvements of foundations of one’s thinking and interpreting experiential patterns. Changes that continually change themselves, evolutions as evolutions of capacities for evolution, and similar higher-order evolutionary reflections may be regarded as inherent features of each directly observable and evident, first-order evolutionary process. Looking back, revising and improving the foundations of one’s thinking thus presents the way for propelling one’s being forward on the path of evolution, whereas creating ever finer criteria of selection, branching the spaces of possibilities and opening novel options can be identified as the ultimate aims and destinations¹¹⁵ in a never-ending story of diversifying and yet sustaining the unity of the overall being and becoming.

A few words may also be said in favor of the ‘forbidden’ links that (dis)connect the levels of somatic learning and genetic evolution. For instance, Weismann barrier that prevents the acquired traits to be transferred to progenies, presents the central argument that supports neo-Darwinian theory of evolution. Whereas on one hand impermeability of this barrier ensures that degenerating modifications upon individuals (as through genetic engineering, for example) could not be transferred to progenies⁶, numerous examples may support the fact that acquired characteristics can be inherited. In his theory of pangenesis¹¹⁶, Charles Darwin thought that an inheritance of acquired traits is possible¹¹⁷, whereas the horizontal transfer of genes through the action of retroviruses, the discovery of numerous retrogenes (that comprise the majority of so-called ‘pseudo-genes’ or ‘parasitic’ genetic sequences), and Steele’s hypothesis¹¹⁷ (which proposes that endogenic retroviruses are able to transfer specific genes through the activity of immune system from somatic to reproductive cells), present some of the indications of the semi-permeability of Weismann barrier, which may deliver the sign for a bidirectional balance between somatic and natural selection on the evolutionary path of life. The described phenomenon of epigenetic inheritance^{68,101} - according to which the fact that in addition to genetic sequences, the whole cellular contents become divided during fertilization, implies that epigenetic networks of relations become inherited in addition to genetic sequences - presents an already mentioned evidence in favor of a partial phenotypic inheritance as well. A further evidence of the semi-permeability of Weismann barrier (in addition to ‘trivial’, natural selection guided effects, such as Baldwin effect¹¹⁸) on one co-evolutionary side and of the divine character of ‘natural selection’ criteria on the other, would provide the support for bringing back the central focus of evolutionary studies to relations between beings and Nature.

However, in regard of the cybernetic thesis which states that the emergence of any novelty needs to be based on a source of randomness⁸⁶, a stochastic character of the evolution of life and ideas cannot be neglected. Similar to the neo-Darwinian concept of evolution, creative mental processes comprise random ‘shuffling’ of concepts and ideas, guided by basic values, immediate intentions and long-term aspirations, and intersected by selection criteria. Acknowledging a stochastic character of conscious and evolutionary processes may present a starting point for uniting two classically confronted worldviews: creationist, rigid, predetermined and fateful on one, and random, accidental, absurd and pointless on the other, and turn their flaws into complementary traits, resulting in an analogy of the co-creational concept of experiential organization at the level of learning of individual organisms and evolution of the biosphere. From the co-creational view at the evolution of life, the inherent neo-Darwinian sources of randomness, the neo-Lamarckian somatic-genetic correspondence, and the Creationist acknowledging of the ‘intelligent design’ and the divine character of ontological foundations of Nature as the co-evolutionary side that through the experiential co-creational ‘communication’

with Her beings guide them on the path of ethical, aesthetic and spiritual advancements, may be altogether assembled in form of another Middle Way concept.

Conscience of the Way

‘To travel hopefully is a better thing than to arrive’
Robert Louis Stevenson, *El Dorado*

One of the main ethical and creative implications of the all-pervading symbolism of the Way is that the character of endless searching, questioning, wondering and widening the space of human inquiry corresponds to the attitude that promotes the evolution of knowledge and life.

The co-creational nature of experiences and its metaphysical and theological analogies according to which each detail of one’s experiential world may be regarded as an evolutionary dialogue between mind and Nature, and spirit and God, respectively, provides implicit incentives for perceiving aims and destinations in the very ‘here and now’, and devoting one’s intentions to the quest to ‘see a world in a grain of sand and a heaven in a wild flower, hold infinity in the palm of your hand and eternity in an hour’, as William Blake noticed. Conscience of the Way as an attentive and semi-meditative observation of subtle patterns in the substratum of one’s experiential reality and imaginative, metaphorical constructing versatile analogous ideas and relationships on top of them, presents a complementary aspect of one’s reason to strict and rigid rules of logical thinking. The most creative human inventions and problem-solving ideas have been throughout the history of human reason typically occurring in ‘daydreaming’ states that correspond to the boundaries between the ‘shores’ of wide-awake and ‘stony’ ordered logical patterns of reasoning and the ‘seas’ of dreamy intellectual wavering and intuitive ‘flashes’ of metaphorical analogies (all encompassed by clear values and bright intentions that correspond to a contextually guiding ‘sky’ and the sun-rising horizons of one’s inner aims and ‘final causes’ – and occasionally enriched by a child that builds castles in the sand as another metaphor of the balance between an infantile spontaneity and aspirational chastity on one side, and the innate tendencies to construct and create on the other - in some of the most inspiring metaphorical landscapes of mind reflections). Knowing that artistic ‘writing is nothing more than a guided dream’⁷, as Jorge Luis Borges noticed, Conscience of the Way may present an originative complement to the visionary drawings of the landscapes of hope and ‘final causes’ on the abstract ‘canvas’ of one’s mind. However, such a creative balance between one’s meditative immersion into ‘here and now’, and a cultivation of precise and ordered abstract reflections poses inherent risks of falling to the unbalanced extremes that correspond to ‘blindness’ to numerous essential experiential signs on the path of one’s development, in one case due to a meditative lunacy and disregarding ‘the trees from the forest’, whereas in the other case due to one’s being preoccupied with ‘eagle-eyed’ focusing activities with tendencies to ever more improve the resolution of one’s superficial detection of experiential patterns, although without the holistic ability to assemble them into the signs of deeper meanings, and divine co-creational messages and evolutionary directives.

The highest summits of implicit ethics that the expressional and behavioral analogy of the concept of the Way points to is neither sole implicit pointing to the very pointing, typical of constructivist ideals^{63,64} (drawn from existentialist influences), nor mere implicit pointing to the significance of ‘objective’ and ‘universal’ world around (whereby neglecting the subjective co-creational factors in the rise of experiences), but mutual and interdependent pointing to one and the other, i.e., to the way that co-creatively spreads between the features of the ‘hidden reality’

and implicit values and aspirations that belong to one's epistemological foundations, and that may enlighten one's expressions with a hidden 'teaching' influence analogous to the one implicitly emanating from the divine, ontological co-creational side. Spiritually fulfilling living may therefore be visualized as the path that points to the beauty of seeking and an endless quest for the 'sun-rising' horizons of knowledge. Dreaming of wonderful landscapes and expressions, waiting for the presents of life to be opened, and air-drawn carrying of unopened letters of the loved ones on one's chests, present on one hand the crucial points of living, whereas on the other hand, their existence is conditioned by the moments that belong to discoveries and revelations after which one may again raise the sails for novel quests on the sea of knowledge and being. Accordingly, living beings may be defined as autopoietic systems - i.e., self-organizing systems whose purpose is self-organization¹¹⁹ – and the circular arrangement of inherent relations in a single organism consequently prevents distinguishing between causes and effects, as well as between creating entities, created entities and the process of creation¹²⁰. 'The living system as a whole is a result of the local operation of its component molecules, not the realization of a plan... There is nothing in a molecular system that could be properly thought as an organizing or guiding principle'¹²¹, as Humberto Maturana observed. However, as linguistic constructions and all descriptive patterns necessarily produce dichotomies and polarities, any attempt to draw a perfectly consistent and complete description of such an ultimate organization of life processes will end up in facing particular harmonies between logical consistencies and paradoxes, and realizing inherent inadequacies as much as acknowledging pragmatic usefulness of the applied explanatory models. For, 'we lose the substrate at the moment when we try to place it into language, to describe it'¹²², as Humberto Maturana continued. A dancer from the dance¹²³, entities from the processes, and qualities from the relational contexts that define them could not be objectively separated. Similar to this, a writer in its devotion to bring enlightening ideas to the social daylight and fulfill his creative aspirations lets his whole being pulsate with the composing words and ideas, so that the 'writer' and the 'written' become 'writing' each other, and one does not know any more whether it is the writer writing the book or it is the book writing the writer.

Introducing spontaneous elements at the level of contemporary social meetings guided by overly conceived plans and agendas may restore the communicational balance in favor of the one comprised of both the aspect of periodicity and predictability, and the aspect that draws on communication as the ultimate purpose of communication. Such a balance may increase the potential of communicational bearing of novel and creative synthetic standpoints, unexpected ideas, perspectives and conclusions, and may further edify the actual competitive and 'racing' character of the modern 'developed' societies in the sense of enriching it with the 'flavor' of imaginative, intuitive and unconditional friendly nature inherent to human creativity. Whereas the lack of aesthetic richness of overly conceived expressions becomes apparent in the form of diminished ability to inspire others (and the most beautiful smiles never know of their reasons), the lack of their ethical character is noticeable in form of disregarding the feedback-permeated sensitivity to environmental responses to the subject's subtle acts and signs. Creative acts that succeed in achieving the background harmony between intelligent, conceptual rigor and flexible, spontaneous exertion are normally favored as pointers to both the inherent drives of creativity in form of imaginative inquiry, beautifying inspiration, wonderful reasoning and surprising character thereof (essential for magnificent scientific and philosophical achievements), and the balance between spontaneous, empathic and trustful imitation and self-realizing and self-responsible originality as the relational key to creative learning. Whereas the integrity of organizations whose members and segments are connected by emphasizing the significance of

merely satisfying the proposed goals becomes seriously threatened in situations marked with deviations from the desired outcomes, organizations pervaded by the harmonies between emphasizing ‘destinations’ and ‘journeys’ become sustained on the ground of a spontaneously cultivated unconditional respect and altruism, and as such are able to surmount significant instabilities and crises in their relationships with the environment¹²⁴. Also, whereas the aims of organizations pervaded by ‘shallow’ implicit ethics may be related to mere self-survival, the ideals of ‘deeply’ ethical organizations might be referring to evolutionary aspects of the members’ inner development and pointing to the sources of enjoyment and meaning in the very journeys. Co-evolution of cognitive members of the contemporary social organizations – nowadays typically shifted away from the balance towards the side of utilitarian individuality and competitiveness versus the side that corresponds to acknowledgment of common interests and cooperativeness – may be actually favored with the increased valuing of relationships based on unconditional respect, mutual acceptance and trust, sincerity and clemency on the account of nowadays dominating relationships based on manipulative tendencies and egocentric disparity, so that the competition/cooperation balance may be restored to its co-evolutionary most productive fluctuations around the ‘equilibrium’ points.

The cultural shift from valuing work processes and journeys to valuing work products and destinations has induced various modern forms of dissatisfaction and people’s ‘slavery’ to the products of their work, instead of *vice versa*. The values related to the power of control, domination, governance and presidency have frequently tamed the innate senses of wonder, humble epistemological settings (corresponding to the cognitive ‘seas’ that are ‘below’ all the observed beings and experiential patterns, and yet all the ‘rivers’ of experience are flowing in their direction), and sacred aspirations to explore the fundamental existential relationships that support the questions of meaning, purpose and evolution of cognition and life, and consequently sustain all the apparent ‘towers’ of knowledge and other pragmatic edifices of humanity. However, the silent exclusion of ethical responsibilities from the domain of scientific methodology by referring to the objective character of the ‘program’ of science and its progress, may result in an alienation of the pragmatic program of science from its metaphysical roots (that belong to benevolent tendencies to coordinate human experiences in mutually constructive ways), and its metamorphosis from a ‘faithful servant’ to a ‘bad master’, as was depicted in the Stanley Kubrick’s movie ‘2001: A Space Odyssey’. Forgetting that all human professions and areas of science rest on meta-professional and meta-scientific foundations that partly correspond to empathic tendencies towards a successful inter-subjective coordination of experiences lies at the core of the paradoxical contemporary deteriorations of the implicit intentions and long-term effects of human professional activities, and that frequently in the direction of complete opposites from their basic assumed character.

The goals of human creative efforts are from this, co-creational perspective as important as the quality of the performance, that is, the way that leads to their attainment. To recall the words of St. Teresa of Avila, ‘I will conclude with this advice: do not build towers without a foundation, for our Lord does not care so much for the importance of our works as for the love with which they are done’¹²⁵. The ethics exposed in the book ‘Tao-te-ching’, and the one emanating from the teaching of Buddhist and Hindu religious traditions (including, most notably, the imagery of Bhagavad-Gita) emphasize the meditative experience of spiritual aims within each moment of existence, devotion to the quality of performance and maintaining attention upon the implicit ethics that supports and outlines the spectrum of the finest qualities of all of one’s expressions, irrespective of their immediate significance, superficial purpose and literal

meanings. The idea that ‘the aims justify the means’ has induced numerous tragic events throughout the history of human race, and an important lesson that can be learned thereupon is that instead of being blinded by the results of one’s actions and creative efforts, one should attempt to awaken the conscience of an enormous significance and purpose immanent in the very act of performance. In that sense, the fact that all great human deeds have arisen from neither the bases of an innate talent nor inert, preprogrammed reasoning, but through ‘shining’ aspirations to gratify and enlighten others by one’s marvelous and enduring work, presents one more reason that explains why simultaneous pointing to the very pointing and pointing to beauty, divine significance and pathways to one’s self-realization in the ‘eyes of others’ – and as such equates with pointing to relations between the hidden epistemological foundations of the subject’s being (as one co-creational side of the continual ‘drawing’ of experiential details) and the hidden, ontological foundations of Nature (as the other co-creational side) - may present the ideal of communication in accordance with the concept of the Way. Because from the co-creational perspective one is aware that every detail of one’s experiential world becomes partly subjectively constructed and as such hides the essence of the subject’s being in terms of the epistemological pedestals from which the process of its co-creation springs, the fact that peaceful and lovely observations and blessings of the beings of the world become reflected in clarity and brightness of one’s epistemological foundations and *vice versa*, becomes clear and reasonable.

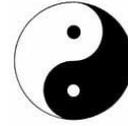
However, as in the case of revealing the significance of linear/nonlinear balance, here we can also recall that no path could exist without hypothesized and at least envisioned starting and final destinations. Human beings can be represented as cybernetic, purpose-driven systems, for the majority of our conscious actions are driven by the ideals of attainment of certain goals. However, throughout the evolution of life we may witness the refinement of these aims from the ones related to the satisfaction of the basic existential needs to ever finer ones, so that each experiential observation of ‘here and now’ may be seeded with endless ‘starry’ aims that are being reflected from the co-creational assumption which states that every minor detail of one’s experiential world emanates from the dialogue between mind and Nature, and as such presents the potential source of immense messages, precious directives and the Biblical ‘signs of the times’. Eventually, according to Heinz von Foerster’s ethical and educational imperative which states that one should ‘act always so as to increase the number of options’⁵, diversifying the space of possibilities, the degrees of freedom (although subtle constraints and meaningful degrees of freedom are necessarily developed in parallel, so that order and freedom may be seen as opposite sides of the evolutionary ‘coin’ of life and cognition), and the multitude of cognitive perspectives and behavioral patterns is regarded as the ultimate goal of systemic educational approaches. However, every fruitful educational approach comprises inner drawings of the visions of final destinations and outcomes of one’s work, enwrapped in the light threads of hope and faith, so that once again, the balance between ways and aims may be regarded as one of the crucial analogous reflections of the co-creational concept of experiential organization.

The boundaries between visions, hallucinations and experiential ‘reality’ cannot be strictly drawn from the autopoietic perspective⁴⁸, for they all become overlappingly constructed upon the cognitive ‘canvas’ of one’s being. ‘Destinations’ derived from abstract reflections and ‘paths’ as immanent in the co-creation of primary perceptions present, therefore, inseparable aspects of one’s experience, which the metaphor of the Way may have already suggested. The subject’s epistemological foundations have in the previous sections been presented as partly comprising the inner desires and aspirations as, so to say, ‘final causes’ that correspondingly guide one’s actions and the co-creational construction and interpretation of perceptual wholes.

Because of this, we partly ‘see what we believe in’, and even more importantly, ‘we become what we see’. ‘Let there be vision: and there was light’¹²⁶, was thus Heinz von Foerster’s thought that pointed to the co-creational assumption that Nature responds with ‘light of the world’ to all the subject’s sincere and benevolent visions and tendencies. Together with the complementary Biblical stance according to which ‘the Creator announced: ‘Let there be light: and there was human vision’’, these two propositions present a perfect pair of imperatives that can support the blossoming of numerous ethico-aesthetical consequences of the proposed co-creational organization of experience, wherein mind and Nature act simultaneously imitatively following and originally responding to each other’s movements in the mutual dance of evolution of being and life.

Whereas the idea of existence as equivalent to an active perceptual co-creation of qualities can be formulated by saying that ‘in order to be, one must see’, Humberto Maturana has offered a complementary idea in favor of instigating the spontaneous aspect of creativity by saying that ‘in order to see, one must let it be’¹¹⁹. However, letting the conscience of spontaneous, unreflective reasoning character - expressed by John Lennon’s neo-Buddhist ideal of ‘be here now’ - become predominant in human cognitive spheres, we may find ourselves one day asking each other the famous question of Jonathan Livingston Seagull: ‘Overcome space, and all we have left is Here. Overcome time, and all we have left is Now. And in the middle of Here and Now, don’t you think that we might see each other once or twice?’¹²⁷. Such an air-drawn attitude and an overly pronounced recklessness - frequently related to the artistic attitude of favoring fancy flights of imagination on the account of disregarding the importance of conceptual rigor and intellectual pedantry - would provide as many disharmonious consequences to the reflective nature of humanity as the overemphasized striving for aims, results and prizes that we currently witness in today’s societies does. Self-awareness which is often criticized by the proponents of leisured aesthetics and purely spontaneous expressions, can be seen not only as the vehicle for abstract reasoning, advancement of science and informational enrichment of the experiential realities, but as a ‘gift of the biology of love’^{103,128} as well. For, many of the sensual attributes of cognitive reflections, such as the senses of cautiousness, prudence, vigilance, circumspection and other self-conscious traits, become transmitted from mother to child during their mutual playing and ‘co-creating’ of each other’s experiential worlds. Also, none of the ideas developed by individual beings as steps on the evolutionary streaming of humanity towards informationally/cognitively and spiritually richer states would have been developed had there been no resolved reflective attempts to overcome thermodynamic barriers as obstacles on the way to negentropically enriched states by means of strenuous abstract reasoning activities. It is the precise balance between valuing spontaneity and meditateness of ‘being here and now’ on one side, and the cultivation of mindful efforts related to purposeful reflections guided by imagined ‘final causes’ on the other, that the concept of the Way calls for as the key to evolution and inner happiness of human beings. For, only through fixing a pair of nodes on a string instrument one can give rise to a wavy activity pattern of the ‘way’ between them and thus to lovely music that spreads the inherent qualities of the instrument towards its environment; similarly, only by fixing at least two ‘aims’ in terms of fixed perspectives, ideas, visions, ideals or explanatory entities - such as mind and Nature in the concept of the Way proposed herein - is that a potential for the rise of the music of narratives in form of artistic stories, scientific models or the religious provision of ethico-aesthetical directives, and spreading of the inner essences of one’s being towards the ‘hidden reality’ of its environment, can be established.

The ethics and aesthetics of tracing the Middle Ways



Tai-chi-tu diagram

Another consequence of the fact that each perceptual event and each reflective description are conditioned by and result in the co-creative formation of qualitative boundaries that divide specific uniformities to interrelated poles, is the idea that reasonable explanations of experiential phenomena and problem-solving pathways ought to be based not on accentuating the propagation of only one of the ‘confronted’ interactive sides, but on emphasizing harmonies in their contrasting relationships and the dynamic balances in their alternate, fluctuating emanations. Nevertheless, the contemporary management attitudes within various professional fields seem to be, in general, more concerned with maximizations than with optimizations, despite the fact that biological and ecological systems can provide numerous examples of how only optimization-oriented streaming and dynamic balancing can lead to long-term prosperity and sustainable development. Numerous context-independent variables - ranging from economic profits to sold records to calories and journal impact factors – used to define quality management guidelines within diverse social domains present evidence that the popular culture is permeated not by optimization and balancing ideals, but by the ones of maximization and unlimited growth.

The discourse presented herein at its core comprises an attempt to juxtapose and conjoin two separate ‘rails’ of the actual philosophical tradition - constructivist, idealistic and solipsistic on one side, and objective, universal and realistic on the other - into a single ‘railway track’ that may guide the ‘trains’ of one’s thoughts to novel and uncharted cognitive landscapes. We have shown that reflecting on experiential qualities as emanating from only one of their co-creational sides (either idealistic or realistic) results in ignorant and disharmonious attitudes in relation to a wide array of ethical qualities. Parts of a cognitive landscape that are covered by ‘curtains’ of such ignorant attitudes may be illuminated by invoking a genuine awareness in contemplation of experiential wonders on an epistemological pedestal marked with a belief that all the details of one’s experiential world are being continually co-created in the communication between one’s inner cognitive and existential cores on one side, and divine ontological foundations of Nature on the other.

Each way possesses two simultaneously separated and connected sides, and not mutual exclusions, but their balancing presents the ultimate ethical approach to one’s interference with them. The following examples related to the nature of experiential realities and ethical ideals, unable to fit the current content of this work, will be only mentioned in order to illustrate the diversity of Middle Ways in the organization of experiential worlds.

- All natural/experiential systems are pervaded by the balance between order and freedom, rigor and flexibility, periodicities and novelties, stabilities and inconstancies, sustainability and evolution, predictabilities and uncertainties, information and noise. For, only their interplay and mutual feeding, as depicted in the ancient Tai-chi-tu diagram, can result in a system’s continual development and evolution. The homeostatic nature and adaptive flexibility have been shown to be maximized in neural networks set at the order/chaos boundary, so that the system states that correspond to the points of balance between order and

freedom may be regarded as attractors of the evolutionary dynamics of neural networks¹²⁹, and *vice versa*. The balance between a ‘conformist’ adaptivity to environmental and social norms on one side, and evolutionary improvements of the era’s dominant doctrines on the other, typifies all harmonious creative efforts.

- Similar to a guitar string that needs to be both rigid and flexible to produce musical tones, firm and tensed integrity on one side, and relaxing, wavy freedom on the other in their dynamic interplay produce music of natural, co-created experiential qualities at all complexity scales. Simultaneous firm willingness and faithful drawing on self-specified premises of reasoning on one, and the readiness for their flexible revisions and improving modifications on the other side thus presents the attribute of a true and balanced intellectual development. The balance between stabilizing and strengthening effects of centralization, implementation of learned techniques and ‘confirmed’ methodologies, and the reinforcement of reoccurring situations and repeating experiential patterns on one side, and the stimulation of decentralized flexibility, chaotic fluctuations, improvisations and adventurous quests for novelties on the other, may be found in all sustainable and healthy developing natural organizations.
- Harmonious social development depends on the balance between the ‘top-down’ influences of regulations and constraints imposed by the centralized authorities, and the ‘bottom-up’, ‘grass-root’ spreading of values and behavioral patterns that co-shape one’s attitudes towards life at the cognitive ‘roots’ (as ‘home’ to cognitive relations that stretch from there on towards the being’s environment in form of ethico-aesthetical qualities). Similarly, the future prosperity for the field of chemical engineering and nanotechnologies might be conditioned by an R&D success in combining manipulative, hard-tech, ‘top-down’ processing methodologies with self-assembly, soft-tech, ‘bottom-up’ synthetic pathways^{38,130}. This may bring scientific design efforts back to Francis Bacon’s belief that ‘Nature to be commanded must be obeyed’¹³¹, which points to an acknowledgment of the co-creative interplay between the subject’s imagined ‘blueprints’ and uncertain, ‘self-assembly’ effects of Nature in any design process, in a way that corresponds to artistic balancing of learned techniques, envisioned outcomes and cultivated aspirations with the dose of meditateness and spontaneity, and which as a result produces outcomes that could not be identical and may be even more inspiring (‘with the help of Nature’) compared to the artist’s primary visions. Imperfections may be, therefore, considered as inherent aspects of any ‘perfect’ creation. Just as a successful traveling on a sailboat depends on a precise interplay between applying one’s yachting skills and relying on convenient weather patterns and the sea currents, all human achievements are based on the co-creational interplay between one’s inner sources of creativity and the ‘guiding’ patterns of Nature. Life harmony as achieved and maintained through an active balance between upward and downward extending ‘forces’ can be found in numerous traditions of knowledge of our civilization, ranging from the philosophies of Heraclitus and Hermes Trismegistus to the Christian symbol of cross, Persian stories and Egyptian symbol *ka*, Hindu mythological parables and the principles of Hatha Yoga, alchemist ‘*solve et coagula*’ principle, and Simone Weil’s concept of ‘gravity and grace’. The demarcating character of information, the co-creational nature of experiential qualities and the holistic nature of experiential/natural systems - according to which predictions of behavior thereof require their description in terms of an interplay between lower (i.e., comprising) and higher (i.e., constituting) interactional complexity levels – may present neat

physical reflections of such traditional metaphors of intersectional and/or ‘mirroring’ encounters that pervade all aspects of one’s experiential reality.

- All creative patterns of reasoning are typified by the harmony between ‘knitting’ rational and logical threads and making imaginative, intuitive and metaphorical ‘leaps’ between logical levels of reasoning. Unities of logical precision and artistic inspiration, partly designed and partly of spontaneous character are following the steps of all truly creative cognitive ‘wanders’. Inseparable inherent aspects of ‘wisdom’ and ‘beauty’ pervade all wonderful expressions (as the original meaning of the Greek word for ‘philosophy’ might have already suggested), as much as ‘ethics and aesthetics are one and the same’³², as Ludwig Wittgenstein noticed. The ideas that comprise this work have also been formed by stretching one hand towards the estate of science and philosophies on one side, and of arts and religion on the other, and finding the ‘middle ground’ that adopts an evolutionary optimism of the contemporary scientific attitudes and an ethico-aesthetical wisdom of the ancient thread of religious traditions of the human civilization into a single conceptual whole, and in that provides the pathways for enriching scientifico-atheistic worldviews with the acknowledgment of an inherent evolutionary intelligence (that through the proposed concept of co-creation of experiential qualities links ontological and epistemological foundations of existence), and provides comprehensional ‘leaps’ that may help in transforming the literal understanding of religious stories to an open acknowledgment of their metaphorical meanings, applied in the form of ethical directives in one’s spiritual/cognitive evolution.
- Although a well-balanced interdependence between theoretical/conceptual and experimental capabilities and efforts presents an important complementary relationship for scientific, technological, informational and spiritual advancement of human societies, a more profound dichotomy in the world of science could correspond to the division between ‘know-how’ and ‘know-why’ potentials within the individual cognitive schemes, where the former types would be mostly preoccupied with developing the fruits of the actual paradigms of knowledge and the latter types would be more interested in revisiting, revising and questioning the foundations of knowledge. Despite this, every type of knowledge comprises the respective balance wherein ‘know-how’ knowledge corresponds to programmed skills and ‘ingrained’, inherent and spontaneous patterns of behavior, and ‘know-why’ knowledge relates to flexible revisions of the given programs of reasoning and action, with the purpose of improving the smoothness of the further flow of their pragmatic application. Continual improvements at the level of ‘focusing’ attentiveness and instrumental, measurement resolution skills on one side, and investigation of the contextual character of the observed features on the other, may be seen as crucial for a well-balanced and healthy management of the scientific progress. The ancient Greek social gap between thinkers and workers – reflected in dichotomies between ‘seeing’ and ‘acting’, philosophizing and working, contemplating and performing - may be neatly bridged by perceiving an inseparable character of the two within all truly effective professional commitments (hence the actual popularity of ‘reading’ among hard workers and ‘recreating’ among scientists). For, whereas it is obvious that in order to act successfully, one must first learn ‘to see’ (i.e., to conceive actions and foresee the effects), Heinz von Foerster’s aesthetical imperative may remind us that ‘if you desire to see, learn how to act’⁵ (and according to the ‘weak’ interpretation of Heisenberg’s uncertainty principle¹³², ‘giving’ necessarily precedes ‘seeing’ in any measurement process), and correspondingly, the disparity between speculative and practical human characters may be transformed into a well-balanced whole, as the biological unison of ‘functionally

specialized' cerebral hemispheres into a complementarily lateralized structure of the brain may have already indicated.

- The harmony between analytic skills, informational diversification, specialist scrutiny and pragmatic reductionism on one side, and synthetic skills, unifying contemplations, systemic knowledge and holistic 'eye' on the other, presents another balance that typifies well-conducted progress in knowledge. When asked by one of his disciples whether it is true that he knows a lot of things, Confucius replied: 'Oh no, all that I know is like one tiny thread. But it relates to (i.e., connects) all the others'. The generally applicable systemic knowledge is similar to such a Confucian 'thread' which pervades all natural/experiential relationships, and which presents an essential complement to analytic skills solely 'glorified' in the domain of contemporary scientific education. The balance between performing various 'I→Y' transformations in the course of diversifying experiential sample spaces and branching the scientific 'tree of knowledge' on one side, and devotion to the search for common 'roots' that, so to say, perform 'Y→∀' transformations (whereby the latter sign is the first letter of the oldest known alphabet⁷), and unify an apparent verisimilitude of experiential aspects and realities into meaningful wholes on the other, may bring us to an essential complementarity between scientific and religious studies after revising the already mentioned original meanings of Indo-European '*skei*' and Latin '*religare*' (being the original roots of the words 'science' and 'religion', respectively), corresponding to the art of differing and discerning, and the art of connecting and unifying, respectively. However, in order to avoid the tendencies to attain static and ultimate balances of this kind through invoking too rigid, 'Esperanto-like'¹³³ unifying threads that instead of instigating, come to constrain further diversifications of individual perspectives, the 'Confucian' threads need to be light and unobtrusive, so as to foster a continual 'drawing' of informational differences at the level of individual perspectives. Similar to a thread that ties other threads into a strong rope, unifying relations need to be drawn at novel spatial and functional domains, not interfering with the 'modeled' relationships and perspectives at the same levels of complexity, but providing contextual 'guiding lights' from higher-orders of investigation. The dynamic character of the balance between diversity and wholeness implies that aspirations to evolve into final answers, ultimate theories and conclusions of the story of human wondering evolution ought to cede their place to the knowledge that the evolution of human knowledge and being may be depicted as 'knitting' of the wonderful 'embroidery' of human knowledge, which proceeds through complementary acts of differing and creating novel 'threads' as experiential relations on one side, and always new 'wisping' of 'wisps', 'wisping' of the 'wisping' of 'wisps'...on the other.
- Symmetrical perfections and asymmetrical imperfections are balanced in all natural creation pathways, as is depicted in a Zen story where the Zen master after visiting a too perfectly arranged garden, throws a can of leaves over it and says: 'Now it is perfect'. Only one side of any hypothetic interaction or balance presents a non-existent and unsustainable path, respectively, for we all know that there is no answer to the famous Zen koan: 'What is the sound of one hand clapping?'

The mutual 'mirroring' of natural and experiential polarities is of dynamic character, as depicted by the confluential character of the opposing sides in Tai-chi-tu diagram. Similar to the way the flow of a day leads to a night and *vice versa*, cognitive diversity of 'daydreaming' results in an empty-minded sleep and *vice versa*, amplitude of a sea tide signifies the beginning

of an ebb and *vice versa*, inhaling activity brings about exhaling one and *vice versa*, ‘artistic’ impressions imply aesthetic expressions and *vice versa*, natural tensions and relaxations are alternately shifting at any particular point of any system’s harmonious development in time, and all the balances mentioned above are maintained and evolve not through their static equilibriums, but through the propagation of dynamic, fluctuating and mutually supporting interactions. For example, social relationships that ‘oscillate’ with producing the senses of empathy and carefulness naturally lead to individual insights into the crucial aspects of philosophical and intellectual reasoning, whereas the development of speculative reason naturally leads to acknowledging the biological nature of cognition and the pragmatic, co-orientational character of scientific and other abstract concepts, illuminating their foundations composed of the patterns of love, care and benevolence. Also, if one wants to deepen and develop the extent and richness of one’s ethical relations with the environment, one should devote one’s attention to the co-creation (= discovery + invention) of experiential outlines in ‘the shades of eternal beauty’, whereas strengthening moral attitudes at one’s epistemological bases through providing an unconditional respect towards beings and details of one’s experiential world may lead to a natural emergence of the outlines of invisible, ‘eternal beauty’ that pervades all the details of one’s experience.

‘If you want to understand mental process, look at biological evolution and conversely if you want to understand biological evolution, go look at mental process’⁶, was Gregory Bateson’s message, consistent with his views of analogies and narratives as the keys to creative human reasoning. Another previously proposed idea was that in order to improve the understanding of reality, one should be devoted to scrutiny of the cognitive foundations of one’s being, whereas in order to learn more of one’s essential qualities and values as ‘invisible guides’ of the co-creational construction of one’s experiences, one should be devoted to scrutiny of the patterns of the ‘outer world’. In a narrower sense of the concept, knowing the roots of one’s reasoning requires learning about the roots of one’s education, social tradition and communicational features of the environment, and *vice versa*. As a training in ‘superficial’ swimming is required to learn the art of ‘deep’ diving for pearls, in order to become a fruitful researcher in a special scientific field of interest, one ought to value the importance of drawing ever wider contexts (through learning of novel perspectives and observing the same ‘programs’ of interest with ‘new eyes’) in which the areas and details of the particular research find their place, guidance and meaning, whereas one ought to know that each individual research or a topical area of science may be represented as a bottom brick of a pyramid, so that a detailed investigation of the given problematic case presents steps that lead to its top which comprises invaluable cognitive, philosophical and ethico-aesthetical insights. Metaphors co-created through elaborate feedback correlations between experimental/observational settings and a theoretical/abstract modeling carry the potential of infinite ways of their analogous interpretation, and as such may be regarded as pointers to the deepest philosophical and ethical secrets of being. In other words, scrutinizing and developing particular perspectives of experiencing and schematizing the patterns of experiential reality results in a familiar acceptance and understanding of various other worldviews, research paradigms and cognitive foundations, whereas tolerant, welcoming and all-embracing attitudes in encounters with novelties and changes become invigorated through one’s insights into reflections of ‘secret’ epistemological foundations of one’s being. Heinz von Foerster observed that ‘if one wants to find oneself, let one change’⁸⁴ in encounters with diverse cognitive perspectives, whereas the cognitive sensitivity to subtle changes, fluxes and differences of one’s co-created experience becomes reinforced through cultivating meditative peacefulness and purity. And finally, Jesus Christ taught that ‘he that findeth his life shall lose it: and he that

loseth his life for my sake shall find it... And whosoever shall exalt himself shall be abased; and he that shall humble himself shall be exalted' (Matthew 10:39...23:12), pointing to the idea that egotistic self-gratifications lead to the loss of integrity and satisfaction in one's cognitive and experiential becoming, whereas a devotion to other beings and Nature itself leads to one's becoming wholly integrated and exhibiting a self-satisfied physical and cognitive harmony of 'glowing' relations.

Therefore, instead of propagating the ideals of permanent and static balances, one should be aware that the 'balance of the Way' corresponds to the dynamic character thereof in terms of alternate exposition of confronting polarities. Evolution of such polar interactions in the direction of continual informational enrichment and diversification of these dynamic relationships is possible only in conditions that correspond not to their annihilating character, but to a mutual potentiation of each other's alternate emanations. In this sense, we may be reminded of a tightrope walker's walk as of a perfect analogy of the dynamic and mutually potentiating character of the confrontations of natural polarities in the course of their informational and spiritual evolution. Namely, a tightrope walker proceeds along the line whilst alternately falling towards the opposite sides. Static balance would be equal to a sterile equilibrium, whereas only alternate 'falling' towards points out of balance can provide him with the potential of advancing forward. Similarly, it is only through one's excursions from perfectly balanced states that enriched cognitive and evolutionary states can be reached. Through such temporary disharmonic deviations, one simultaneously opens the views towards devastating 'abysses' (that may correspond to one's 'fall' into permanent disharmonies) and steps towards the attainment of one's evolutionary visions, so that every 'opportunity' carries immanent 'risks', and *vice versa*. This is also why each evolutionary, truly progressive 'walk' in any creative domain during its attempts to continually alternately harmonize the disharmonies and *vice versa*, resembles the insecurity of a tightrope walker in its act, so that utilizing the practice of being secure in one's insecurities and *vice versa*, being strong via one's cognitive flexibility and *vice versa*, being wise in spontaneous living and *vice versa*, all on the epistemological bases enlightened by one's ethical qualities, visions of hope, and strong and yet flexible will, presents the way to co-create healthy cognitive stances that may spontaneously promote evolutionary 'walks' on the relations that connect the being with its environment. Balance between balance and imbalance presents, therefore, the ultimate balance of the profound co-creative guidance of our experiential realities in the stepping of humanity towards novel, evolutionary 'sun-rising' horizons.

The Way of Love

'She saw every relationship as a pair of intersecting circles. It would seem at first glance that the more they overlapped the better the relationship; but this is not so. Beyond a certain point the law of diminishing returns sets in, and there are not enough private resources left on either side to enrich the life that is shared. Probably perfection is reached when the area of the two outer crescents, added together, is exactly equal to that of the leaf-shaped piece in the middle. On paper there must be some neat mathematical formula for arriving at this; in life, none'

Jan Struther, Mrs. Miniver's problem

Simultaneous connectedness and separateness, unity and disparity, being One and yet being two in the subject's relations with other beings of the world is what the metaphor of the

Way symbolizes at the level of social relationships. It may present a wonderful inspiration in the attempt to outline the Way of Love as an ultimate and yet the most elementary foundation for building social relationships permeated with the senses of love, care and benevolence, which can be, from the co-creational perspective, regarded as the beginnings, drives and the ends in the corresponding representations of the purpose, meaning and evolutionary steps of being and life.

Just as the Sun creates and sustains life through the balance between the ‘inner’ burning of its essence and ‘giving’ the results unconditionally to others, human actions and comprehensions of experience need to be guided by the corresponding ideal of balance between an inwardly-oriented meditateness and cultivating an introvert ‘glow’ of one’s sacred aspirations on one side, and living for others and dedicating all of one’s products of work and contemplation to well-being and happiness of beings of the world on the other side. The image of crucified Christ as one of the oldest Christian symbols depicts a similar intersection of the meditative immersion into the ‘heart and soul’ of one’s self and stretching the ‘bliss-bestowing hands’ towards the world. The ‘lonely’ imaginative co-creation of ‘shining’ sources of the sense of self-responsibility and of wonderful relations that one may send to the environment becomes intertwined with passionate aspirations to deliver one’s ‘inner treasures’ to the world, knowing that ‘blessed are the poor in the spirit: for theirs is the kingdom of heaven’ (Matthew 5:3). Two essential Christian commandments (Mark 12:29-31) may, in fact, be considered as two ‘normative nodes’ that establish a firm basis for attaching the strings of the Way of Love. Through incessant stretching to reach novel impressing perspectives and expression pathways, the ‘strings’ may subtly oscillate as kept between the two hard rock foundations of the basic Christian norms, so that a wonderful music of spirit is being produced and sent to vibrate throughout the natural breadths. This pair of normative ‘nodes’ presents a basis for achieving the balance through which wholeheartedness and devotion to others potentiate one’s patterns of inner creativity, and *vice versa*. Whereas leaning firmly only to the first norm related to one’s devotion to finding one’s own way and neglecting the significance of self-realization of other beings may result in one’s intolerable loneliness and mental isolation to one’s own ‘planets’ of life experiences - as in the tale about the Little Prince³⁶ - a sole surrender to the needs of others (corresponding to holding on to the second norm only) with disregard of the need to meditatively follow one’s own nature and ‘inner voice’ may lead to a creative desertification of one’s domains of cognitive creativity, as can be noticed in case of many atheistic, moralistic and even Christian (Romans 13:9) teachings. It is only the balance that the Way of Love epitomizes that may provide one with the Little Prince’s aptitude to inquiringly leap from one ‘planet’ to another, trustfully and openheartedly modifying the perspectives of observing the world of human experiences, although with a careful preservation of one’s own mission, journey coordinates and a heartily devotion to the ‘rose’ from one’s own ‘planet’. With such an attitude, one can live out the words that Moses proclaimed when he descended from Mount Sinai: ‘I stood between the Lord and you at that time, to shew you the work of the Lord’ (Deuteronomy 5:5), promoting the idea that when being ‘crucified’ between the pair of essential Christian norms, one spontaneously becomes an instrument for expressing the music of heavenly prophecy and love.

Through the cultivation of a cognitive attitude depicted as the Way of Love, any living instance may become a sacred encounter with the divine foundations and creatures of Nature. As Martin Buber noticed: ‘When I say: ‘He believes’, I mean ‘He encounters’’⁷. By neither forgetting about the reliance on inner foundations composed of one’s deepest values and aspirations, nor overlooking the importance of endowing others with empathy and *agape*, a being may set itself into holy relationships, which can be picturesquely represented as bridges that are

supported by strong, Biblical foundations in form of deep ethics and sacred intentions, and benevolently provide the paths for cognitive ‘troubled waters’ to be crossed. No prayer can radiate with a healing and integrating harmony if it proceeds in the direction of degradation of one’s inner sense of responsibility by placing it in hands of other authorities (including the concept of ‘God’), or if it becomes unrelated to hopes and wishes to find the ways to provide the fruits of one’s goodness to others by being oriented to mere individual beneficence. However, prayers that succeed in achieving the balance between alternate empathic approaches towards the whole world with one’s being and receding to recall and reconstitute one’s foundations of inner responsibility for the decisions and choices made, become producing ‘glowing spiritual music’ by such fine oscillations around the central point of balance between the senses of benevolent devotion and inner creativity.

Numerous traditional gaps between contrasting creative approaches can be bridged and united into single dynamically balancing attitudes by invoking the Middle Path of the Way of Love. For example, a well-balanced harmony between Epicurean humbleness, meekness, renunciation and self-satisfaction, and Stoic predisposition to hardship and missionary engagement in actions aimed for the well-being of others, may be accomplished. The balance between meditative stillness and solitariness, and charitable resoluteness and active involvement in pragmatic creations - that the Serbian Saint Sava preached about¹³⁴ - may similarly become attained in frame of a single, dynamically oscillating state. Subtle fluctuations around the central equilibrium point in alternate directions that correspond to self-withdrawing meditateness and empathic unity, introspective reflections and intimate and gracious acting, holding hands and waving farewells, approaching and distancing, may indeed be responsible for producing the ‘enchanted Cosmic music of Love’. Through such a fine dance of perspectives that alternately correspond to meditative inwardness and empathic outwardness, the juxtaposed ideals of the Christian Love and Buddhist ‘nonattachment’ seem to be transformed from an apparent incompatibility and mutual exclusiveness into single, mutually supporting ‘rails’ for the passage of the ‘train’ of Love. A genuine religious sense of connectedness to all the details of one’s experiential world and a spiritual, ‘free-as-a-bird’ attitude of nonattachment can be, therefore, transformed from their seeming contradictoriness to a single dynamically fluctuating perspective. The Christian ‘peace’ (John 14:27) that corresponds to one’s inner peacefulness, quiet gracefulness and blessing acceptance of every detail and being of the experiential world, and the Christian ‘fire’ (Luke 12:49) related to one’s ‘burning flame’ of empathy, love and desire to co-create each moment of one’s life for the sake of enlightening others, may also become merged into a single attitude denoted by the Way of Love. As has been remarked earlier, these two balancing ‘sides’ may be visualized in terms of fixed points of a guitar string that enable and sustain its oscillations (produced by a continual switching from one perspective to the other) and create divine harmonies that spread from the human beings’ ‘hearts’ into the furthest natural breadths.

In the state of a perfect and yet imperfect, always dynamic and balance-seeking balance, one’s being fluctuates between the states of Buddhist nonattachment and meditative inwardness on one side, and blending with the world, becoming One with each detail and being of the experiential world on the other. Considered as an art of balancing diligence in ordering one’s ‘inner’ reflective and aspirational patterns and openhearted devotion to ‘outer’ details and beings of the experiential world, the ultimate ‘meditation’ can be regarded not only as an exercise of self-focused and ‘empty-minded’ attentiveness, but as a practice of balancing and ‘medi-ation’ between one’s ‘insides’ and ‘outsides’ through vigorous knitting of the co-creational threads that

religiously link one's foundations of ethics and ingrained values on one side, and 'divine' messages of 'hidden reality' on the other, so that the traditional gap between the Christian notion of 'prayer' and the Oriental concept of 'meditation' can be gracefully bridged. Instead of cultivating a self-immersed resistance to change or a self-losing fictile vicissitude, posing one's attention in form of the 'bridges' between one's 'insides' and 'outsides' presents the key element of enriching communications with all the beings, artistic pieces and co-created details of the experiential world. 'A warrior of light dances with his companions, but does not place the responsibility for his actions on anyone else'¹³⁵, Paulo Coelho wrote, and the Way of Love correspondingly presents neither a manipulative egotism nor a 'blind' following of pre-given or preconceived rules of conduct, but signifies the balance between accepting responsibility for the development of all the details of one's world of experience and being holy devoted to endow others with the gifts of divine inner creativity. Self-responsibility as delivered from one's anchorage in sacred values and aspirations, and an empathic pining to see 'how the world looks from the eyes of the other', become combined in a mutually potentiating balance of the Way of Love. As can be inferred from the proposed concept of the co-creational organization of experiences, the more one branches the domain of personal responsibility, the more enlarged the purposefulness and meaning of the whole existence become¹³⁶, and *vice versa*. Similarly, cultivation of sacred values, wonderful intentions and the senses of self-responsibility, and encouragement of the ideals to support and foster the spiritual growth of others mutually potentiate and reinforce each other in the course of an active emanation of the Way of Love.

Aspirations to empathically 'blend and become One' with the beings and details of the experiential world, therefore, present only one side of the essence of Love, whereas continual changes of perspectives are required in order to avoid ignorant consequences of the 'blind spot' effect that each single perspective generates. Just as a stone upon which one stands could not be raised, observed and restructured unless one steps aside and changes the perspective of their relationship, the foundations of one's cognitive settings for the processes of observation, abstract reflections and creative actions can be improved only by investigating the effects that belong to invisible, 'blind spot' regions from new perspectives that 'illuminate' them. Despite their seemingly paradoxical character, the moments of distancing and stepping away present inherent aspects of the development of one's knowledge of the encountered systems and enrichment of the patterns of Love that reverberate during the propagation of such subtly oscillating relationships between the observer and the observed. The Way of Love reflects such a dance composed of alternate moments of approaching and 'blending', and again diverging to find novel relationship perspectives with the purpose of mutual development. The popular contemporary slogan which states that 'quality knows no borders' may in the context of the 'blind spot' effect be endowed with a novel and more profound connotation, that is related to the fact that 'a boundary knows no boundary for boundary is a boundary'. Likewise, by constantly dwelling on the 'thin edge' of the Way of Love and spreading from there on the relations of goodness and grace, one cannot be aware of one's inherent qualities, just as the Sun that 'lives in the darkness' and yet endows the planets with the cheering life cannot 'observe' its own beauty and meaning.

The co-creational thesis on the origins of experiences, according to which mind and Nature at the same time autonomously and in unison co-create the patterns of individual experiences and natural environments, may be considered as a metaphoric reflection of the same harmony that can be invoked to oscillate between the beings of the world, simultaneously separated and connected by the wavy pattern of the Way of Love. A mastery of the Way of Love may be, therefore, considered as the ultimate 'teaching' goal that emanates from the co-

creational interaction between mind and Nature. Consequently, every detail of one's experiential world may be regarded as a 'divine' sign on the subject's way towards 'sun-rising' horizons of cognitive landscapes, which depict the ideal of one's everlasting creation of Sun-like, 'shining' relationships with the beings of the world as the sacred goal on a mind that follows the Way of Love. Just as the concepts of 'invention' and 'discovery' are as a consequence of the idealistic/realistic cognitive balance (that the concept of co-creation of experiences implies) merged into a higher-order form that describes cognitive 'arrivals' at novel experiential patterns, the concepts of faithful 'following' and autonomous and self-responsible 'creating' of the very Way of Love may be also merged into a higher-order intersection form that more faithfully depicts the path that leads to one's mastery of the Art of Loving⁴⁴. Once again, we may be reminded that a precise balance between conformity and originality, imitation and differing, as well as between careful 'keeping' of one's senses upon the subtlest experiential boundaries and self-immersed introspections, presents the way that leads to its mastery.

Numerous fallible repercussions in social relationships could be noticed as consequential to one's adherence to unbalanced positions on the Way of Love. In this sense, cognitive attitudes could in extreme cases belong to either one's mental and emotional isolation and orientation towards self-beneficial choices only (which can be the consequence of an adoption of either solipsistic or objectivistic premises in the co-creation of experiences), or one's tendencies to submit and immerse inner creativity and self-responsibility to the authority of others. Whereas in the former case, an utter obsession with bringing comfort and satisfaction to oneself leads to relationships permeated by selfishness, extortion and 'sadistic' animosity, in the latter case a stark 'blindness' by the 'magnificence' of others seems to lead to one's expressional passivity, 'masochistic' submissiveness, loss of the 'dancing' patterns of inner creativity, inert pliability, and weakening of a deeply rooted sense of self-responsibility and self-decisiveness. Ignorance towards an infinite array of divinely marked experiential features as potential sources of all-encompassing cognitive insights, typifies both of these extreme cognitive attitudes in the domain of social relationships. Whereas the thought according to which 'one's faithfulness may be the product of indolence of the spirit' can be applied in a description of the latter, submissive character, Jesus' words which state that 'they are like unto children sitting in the marketplace, and calling one to another, and saying: we have piped unto you, and ye have not danced; we have mourned to you, and ye have not wept' (Luke 7:32), may be used in depicting the former, manipulative character. However, comparing to the extreme points marked by either an incapacity for creative introspections and an overly pronounced need to rely on extraneous opinions as supports for edifying one's own character (which is the elementary target of egotistic attitudes: gratification of oneself in eyes of the others), or an ability to seek for the sense of empathy and unity with others only through a monastic renunciation (when instead of finding, one 'loses himself' in encounters with others, which may literally correspond to 'falling in love' in its 'unbalancing' connotation: one's inner creative 'constellations' and numerous details that 'sparkle with wonder' in one's experiential world become disregarded on the account of the subject's blindness by the 'authority' of others), a cultivation of the Middle Way of Love might endow one with a simultaneous manifestation of the senses of individuality, tender loneliness and creative distinctiveness on one side, and the senses of empathic imitation, inspirational mimicking and kindhearted 'blending' on the other. Instead of exhausting each other's creative potentials (resulting from social interactions that are 'out-of-balance' in the context of the Way of Love), they may be mutually accentuated and impregnated through one's practice of the Way of Love.

The nowadays challenging balance between the sense of unconditional respect of autonomous existential spheres of others, and the cultivation of an implicit ethics based on the attitude of open-armed, protective, caring and all-embracing meetings with others, may be naturally embodied through one's following of the balance that the Way of Love signifies. Disgraceful discomfort that is typical of the actions performed in an exceedingly self-aware and overly controlled manner, and guided as such by one's intentions to fascinate and attract others (i.e., forgetting that care for others is an essential aspect of maintaining the balance on the Way of Love), can be transformed into a pleasant harmony of an enjoying and wondering self-awareness and spontaneous movements through the practice of the Way of Love. Tendencies to unconditionally defend one's own attitudes and research ideas during their open inquiries, caused again by the tendencies to egotistically impress others and gratify oneself, may also be transformed into the harmony of flexible revisions and readiness to change on one side, and a 'faithful' holding on to dear and invaluable aspects of the foundations of one's reasoning on the other. The 'loving' imbalance thus becomes tackled in a direction that promotes care, love and aspirations to sincerely enrich other people's lives and worldviews throughout the communications that the subject becomes involved in. In such a balance, the potentials for an ostentatious and overweening 'indoctrination' of others on one side, and a passive and unquestioned obeying standpoints and ideals of others on the other, may become transformed into 'encounters of the equals', which is an elementary attribute of the social relationships based on the Way of Love.

Instead of exalting oneself through the propagation of manipulative and creatively oppressing relations towards others (by viewing others as extensions of one's ego), or self-humiliating and oppressing one's own inner creativity by a 'blind' submissiveness to others, the Way of Love fosters encounters of equals and consequently instigates a mutual opening of the beings in interaction towards the whole range of subtle effects of their respective environments, instead of limiting each other's attention to themselves only. Instead of the satellite-like speaking 'about' or despotically speaking 'to', through following the ideals of 'equality' one may eventually start to speak 'with'. It is neither only 'I' nor only 'You' that presents the key to the passage of Love, but the Way that becomes built between these two firm foundations of the bridge of Love: one corresponding to the reinforcement of one's 'I' of introvert and contemplative powers, and the other one corresponding to the devoted bringing forth the fruits of these 'inner blossoms' to 'You'. Because devotion to others stimulates insights into the deepest secrets of oneself (instead of 'losing' oneself in the opposite case), whereas the reflective exploration of one's cognitive attitudes eventually results in realizing that benevolence, faith, love and care present the bases of human knowledge and that all of one's creative deeds have the purpose of coordinating and 'enlightening' other people's experiences, these two basic 'nodes' of the music of Love may be considered as supporting and strengthening each other. In the context of invoking the need to 'enlighten' these basic implicit 'roots' of the scientific practice as an empathic co-orientation of experiences, the Way of Love may be regarded as a complementary aspect of one's efficient engagement within the scientific community.

At this point we may become once again reminded of the psychoanalytic phenomenon of reciprocal manifestation of manipulative and submissive tendencies at different relational domains. Whereas on one hand manipulative/submissive imbalances typically become reflected in a wide range of diverse experiential aspects, a dominative attitude exerted in certain aspects of one's experiential reality will on the other hand also imply a 'blinded', submissive and lunatic attitude employed at some other levels of the experiential organization, and *vice versa*.

Submissiveness to one's historical, cultural or religious traditions that induces dominative and alienated relationships with other beings, presents a classical example of such an effect. Also, submissiveness to the authorities of other beings, social groups and organizations typically implies 'manipulative' relations towards one's own nature, which may be evident in terms of the forced patterns of reason and the unquestioning reliance on preconceived prejudices at the level of experiential interpretations. On the other side, submissiveness to one's own 'instinctive' nature without being receptive to fundamental changes and improvements of one's being and knowledge by learning from others, often implies insensitive and manipulative relationships with the being's surrounding. Devotion to sustain the balances between logical rigidities and metaphorical, imaginative aspects of reasoning may be reflected in harmonious and well-balanced social relationships as well. The already presented example of an orange juggler may have supported the idea that the range of 'commanding' in each control loop becomes directly proportional to the range of 'obeying', so that each process of 'controlling' has its reverse side of 'being controlled'. Despite remaining convinced in our efficient 'control' over specific patterns of the experiential world, we may 'wake up' one day realizing that we have all the time been 'slaves' of our own enslaving and manipulative aspirations, so that the whole range of our worldly activities has been, due to our 'blind' and invisible motivations, a creative passivity after all.

According to an inherent interplay between 'sad and lonely' distancing and 'joyful and congenial' blending, the proposed nature of the Way of Love implies that intersections of cheerful and ecstatic cognitive encounters by the moments of distanced contemplations and 'marble statuesque' abstractions present an elementary aspect of all fruitful cognitive relationships. Some of the wonderful artistic pieces reflect this nature wherein the long moments of struggling quests throughout the 'hearts of darkness' in the end become transformed into an optimistic shine and healing tears of joy and devotion that open endless fields of one's curiosity, inquiring occasions and marvelous work. In that sense and in the light of the ideal of higher-order balances between balances and imbalances outlined at the end of the previous section, the perfect balances on the Way of Love may present only semi-potent states that reflect one's inner sense of perfect harmony, whereas fruitful acting in the sense of improving the worldviews of ourselves and others may be inherently related to acting according to desires to restore the 'lost' balances. These complementary unbalanced states may correspond to either 'over-subjectivistic' or 'over-realistic' cognitive states of one's being. Whereas in the former case, the balance would be restored by aspirations to bring forth the drives for empathic acting, in the latter case the balance would be reestablished by 'moving' in the direction of improvement of the epistemological foundations of one's being by introspective revisions of one's basic relationship attitudes, aspirations and hidden, invisible intentions. However, the central point of equilibrium may still correspond to the Taoist representation of the void center of a turning wheel as the source of the wheel's usefulness. It may similarly present the central point of the windmills of our hearts and palms that create and provide the treasures of the 'stuff of life' to the whole world, so that falling to the side of meditative inwardness, reflective self-integration and inner edification of our spiritual aureoles with every inhalation, only to restore the balance by giving the fruits of our creativity to the world, imagining 'enlightening blissfulness in hearts and minds of the others' and 'knitting the threads' that mutually connect the cognitive foundations of our beings with the each complementary exhalation, may provide us with successful walking along the line of our spiritual development. However, the question of higher-order balances may remain as a topic for future elaborations of the subtle interplay between balances and imbalances,

and between the states of perfect happiness and repenting moments in one's treading the sacred path of Love and evolutionary roads of humanity and life.

This chapter has started as a 'dance' pointing towards the dance, and correspondingly it will reach its final stage in the same, dancing manner. In accordance with the idealistic/realistic harmony of the concept of the Way, discoursed in the contexts that ranged from the origins of primary perceptual qualities, experiential wholes and abstract reflections to metaphysical, ontological and theological mind/Nature relationships to the Way of Love, two complementary principles may be proposed, with the second one¹³⁷ being exempted from the marvelous teaching of Heinz von Foerster:

Idealistic imperative: 'In order to dance with someone, we have to dance by ourselves'

Realistic imperative: 'We have to dance with someone in order to recognize who we really are'

By finely balancing these two ethico-aesthetical criteria for seeing & acting, one has an opportunity to surpass the unbalanced ranges that may correspond to either insensitivities to subtle signs of environment to the subject's intentions and expressions (as the consequence of falling towards 'over-subjective' imbalance of the Way of Love), or exhaustion of the sources of inner creativity by passive and similarly ignorant immersion of one's attention into authoritative figures that seemingly 'dominate' the actual environments (as the consequence of falling towards 'over-realistic' imbalance of the Way of Love). Instead of becoming either a meditative dancer 'blind' to subtle signs that come from the others, or passive imitator with torn 'strings' between the 'wells' of one's inner creativity and the common experiential phenomena, one has a chance to become a wonderful dancer by dancing the dance of balancing the polarities of the Way of Love, not in 'perfectly' equilibrated, but in dynamically accentuating, 'perfectly imperfect' manner. The dynamic, eternally fluctuating harmony between these two principles presents the basis for creating a wonderful music of Nature and being that may keep on drifting with its majestic divinity throughout the 'leafy' corners of the Universe.

As the Confucian thread which connects all the other threads, the way of Love proposed herein presents the final and the all-encompassing step on our journey. Standing on its epistemological foundations, one can return to the beginnings of the inquiry that ran throughout the lines of this chapter, and with a beautiful enthusiasm and grace reinvestigate the elementary qualities of our experiences. The sense of wonder that presented the first steps of this chapter have led us to formulating and acknowledging the Way of Love, which will return us to the wondering beginnings in our endless circles of cognitive, spiritual and ontological evolution.

Conclusion

The co-creational nature of all experiences proposed and elaborated in the course of this chapter has implied that the scientific practice could be seen not as an objective and observer-independent method of probing the 'truthful' character of reality, but as an everchanging set of pragmatic metaphors applied for the purpose of mutual co-orientation and coordination of human experiences. The foundations of science, religion, arts and common linguistic communication, therefore, belong to benevolent aspirations to point to lovely directions on our individual paths to spiritual evolution and the sunrises that they keep hidden behind the horizons of momentary experiences. Simply saying, the roots composed of the patterns of love and care have presented the sources for all the wisdom that has been dawning upon humanity ever since.

Intending to overcome the overly submissive tendencies to disregard the ‘rest of the world’ and dissipate one’s patterns of inner creativity by ‘staring’ into each other, Antoine de Saint-Exupery has proposed that ‘love does not consist in gazing at each other (one perfect sunrise gazing at another!) but in looking together in the same direction’¹³⁸. Each tightrope walker’s walk comprises both balancing and linearly advancing aspects, so that realistic/idealistic harmony of the ‘co-creational’ thesis might consequently be reflected in pointing to the ‘same’ sun-rising horizons in our common evolutionary ‘walks’ as complementary to dialectical facings and ‘inside’/‘outside’ reflections that each informational boundary typifies. One of the major points of this chapter has been, therefore, pointing to the beauty of pointing and to the sacred quest for the sake of experiencing the divine beauty of questioning, as much as pointing to beautiful evolutionary and cognitive landscapes that are being co-created through the dance between epistemological and ontological foundations of being and Nature, and as such are always extending beyond the horizons of common experiences. In order to succeed in such a lucid pointing, one needs to set the ‘compass’ of one’s heart in concert with graceful values, sacred intentions and benevolent aspirations to co-orientate oneself and others in enlightening experiential directions. After setting some wonderful and flexibly revisable cognitive foundations, one opens the door to becoming a prudent ‘tightrope walker’ that may precisely balance meditative and self-immersed ‘burning’ of the deepest qualities within and providing them as providential and ‘sunshiny’ relations towards others. ‘When you make the two into one, and when you make the inside like the outside and the outside like the inside, and what is above like what is below... then you will enter the Kingdom’ (Thomas 22), was accordingly part of the Christ’s teaching, that has pointed to such simultaneous orientation towards ‘within’ and ‘without’, i.e., to cultivating a passionate heart (sustained by the waves of deep ethics produced ‘within’) and yet spreading ‘enlightening’ relations towards others, and as such vacillatingly stepping forward in our imperfectly perfect ‘walk’ over the ‘thin edge’ of the Way of Love.

The main point of this chapter has been pointing to simultaneous separateness and connectedness, being two and yet being one as immanent in all aspects of one’s experience and represented by the universal and omnipotent symbolism of the Way. As we proceed with leaving this work aside and continuing our evolutionary journeys with balancing the balances and imbalances, we may still keep in mind the final scenery of the movie ‘Modern Times’ as a ‘touching’ image of the metaphor of the Way. Whereas after attempting to merge a mere pragmatism of perfectionist industrial attitudes and imaginative and ‘imperfect’ essences of humanity, the Little Tramp and his beloved one depart together towards some new horizons, after similar efforts in blending scientific rigorousness with ethico-aesthetical cognitive ‘hearts’ of humanity in the course of the interdisciplinary ‘walk’ presented herein, one’s ‘idealistic’ originality, individuality, distinctiveness and self-responsibility may become blended with the ‘realistic’, benevolent aspirations to ‘point out the ways’, to transform one’s whole being into wonderful providential ‘signs’, and ‘walk’ in unity with humanity towards ‘shared’ horizons of knowledge. Since we have seen that it is the ‘sun-rising’ contexts - partly defined by one’s inner aspirations and ethical values that stand at the foundations of the subject’s epistemological standpoints - that outline the qualities of one’s actions and deeds in the world, beauty and divinity in frame of which we imagine these ‘hidden’ horizons partly define the preciousness and profoundness of the actual journeys and actions performed ‘here and now’. As the ancient master Lao-tzu wrote: ‘The sacred man does not collect (for himself): he lives for others and yet becomes ever richer; he gives to other people and lives with ever greater treasures. Heavenly

Way blesses, but does not bring harm. The way of the sacred man evolves, but without confrontations'¹³⁶ (Tao-te-ching LXXXI). And when we see 'Heavenly cherishing hands' behind the horizons of momentary 'encounters' with experiential details, scientific arguments, artistic pieces and beings of the world during our inquiring quests for the threads that will additionally adorn the arabesque of co-creational patterns weaved in the course of this work, we may spontaneously radiate with the harmony of peace, serenity and gentle gracefulness on one side, and passionate quest for knowledge, love and shining grace on the other.

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On Holism and the Contextual Character of Natural Qualities

Abstract

This paper presents a discourse on the contextual nature of natural/experiential qualities. The realistic and observational contexts in which a system exists are demonstrated as equally involved in defining its qualities. As a result, each quality that the subject comes across may be regarded as natural and experiential at the same time. The subsequently edified thesis of the contextual co-definition of natural/experiential qualities in the relationship between mind and Nature is shown to possess numerous favorable ethical, aesthetical, communicational and educational consequences. The contextual nature of natural/experiential qualities is further correlated with the holistic character of natural systems and events, which is illustrated by several real-life examples. Methodological problems of the standard, reductionist explanatory frameworks are additionally discussed with an emphasis on the major descriptive flaws of quantificational approaches and in respect to feedback-permeated, cybernetic and autopoietic organization of physical and biological systems.

Introduction

‘The things appear in a way that our spirit
endows them with’

Jovan Dučić, *The Sun*

Contemporary social milieus are in large extent dominated by competitive ethical values that may be neatly depicted by the metaphor of ‘race for the prize’. Despite the fact that the beginnings of the Western tradition of wisdom are marked with the picture of Socrates who allegedly¹ used to suddenly, without any obvious reason, stop during his leisured walks, and stand still for hours, deeply engaged in his meditative thoughts, it seems as if humans are nowadays pretending to themselves to be too ‘busy’ to appreciate the moments of gentle looking over one’s shoulder and occasionally revisiting and revising the guidelines that steer the patterns of their abstractions and actions. Moreover, raising one’s glances upward, wondering in perceptual encounters with the starry sky, and looking for heavenly signs thereupon seem to be mostly overcome by accepting worldviews according to which instead of the Biblical ‘Heavens’

above, only molecular particles that move in Brownian way and in their random interactions produce purely accidental phenomena, remain. However, this chapter challenges the latter worldview through an exploration of the steps that may once again lead one towards establishing faith in ‘the signs that fall from the Heavens above’, although this time through the perspective of scientific and philosophical reasoning. In the end, we might realize that the immanent divinity of the natural co-creation may indeed be discerned by both observing the experiential foundations of one’s being and raising its views towards Heavens. So far, keeping in mind either Socrates’ bright statuary posture that reflects his deep engagement in inner contemplations while carefully watching the patterns of the sky, or the vision of eternal Platonic beauty with Her eyes simultaneously oriented towards (and vigorously dancing between) the inner core of spiritual values of her being on one side and seeking the signs of immanent divinity obscured in every detail and aspect of the world on the other, may serve as a picturesque guidance on our way.

The concept of perceptual, reflective and social ‘co-creation’ of experiential phenomena and cognitive meanings has been in more details discussed in the previous chapters, but an additional reminder of its connotation may be presented herein as well. Namely, whereas objectivistic standpoints for the explanation of cognitive phenomena are based on the idea that individual experiences result from passively detecting physical outlines of an ‘outer’ world and projecting the directly corresponding images upon one’s cognitive ‘mind-screen’, constructivist stances claim that the world of one’s experience arises as the product of continual autonomous construction of experiential wholes out of a non-indicative sea of raw environmental impulses. The concept of co-creation of experiential qualities adopts Middle Way with respect to these two ideas. The objectivistic proposition of perceptive ‘observation’ and reflective ‘discovery’ of ideas on one side, and the constructivist proposition of perceptive ‘construction’ and reflective ‘invention’ of ideas on another are correspondingly merged into the concept of perceptive and reflective co-creation of experiential qualities, according to which all products of one’s perceptive and reflective activities are considered as arising through the co-creational ‘communication’ that involves an active creative engagement of both the individual cognitive structures and the corresponding environmental stimuli that the subject beings are being overwhelmed with.

Holistic organization of natural systems

‘Nothing is quite beautiful alone: nothing but is
beautiful in the whole’

Ralph Waldo Emerson, *Nature*

Holistic order wherein none of the system qualities could be utterly expressed as a sole function of its parts presents a common feature of all natural/experiential systems. Albeit Aristotle’s opinion that ‘the whole is something more and something beyond the sum of its parts’², the progress of the Aristotelian thought resulted in the rise and current supremacy of reductionist worldviews, neatly connected to the tradition of ‘objective’ scientific knowledge. However, closely related phenomena of linearization and reductionism present only pragmatic approximations invoked in order to simplify the conceptual representations of experiential phenomena and facilitate their mathematical solvability. Similarly to maps and names frequently becoming mistakenly identified with the territories and entities that they represent, scientific representations pragmatically simplified by means of reductionist approximations also become erroneously identified as true reflections of the natural order, despite the fact that all linguistic

and scientific expressions present only metaphors of experientially observed relationships and events.

If a hypothetical natural system composed of a single entity becomes enriched with an additional entity of the same kind, only an oversimplified mathematical representation of the effective result of such an addition would be $1 + 1 = 2$. As a matter of fact, such a mathematical assertion may be valid only upon the acceptance of certain 'rules of the game'. In other words, the given expression may be regarded as meaningless unless the definitions of mathematical operations and numbers inherent thereto become implicitly acknowledged. Because the resulting system would be upgraded with new relationships that figure between the two entities, the final outcome will present 'more than and beyond' a simple sum of the system parts. Accordingly, because the holistic character of natural systems is tied to the fact that certain systemic patterns and relationships exist only while the system unity is preserved, systemic worldviews employ relationships (independently of the structural complexity of nodes as end points that these relations comprise) as basic explanatory terms, in contrast with many traditions of scientific and philosophical speculation that rely on entities and 'building blocks' as the basic ingredients of explanatory frameworks.

Many examples of holistic phenomena that pervade the order of the Universe at all scales may be provided. The meaning 'discovered' in any linguistic scripture as a whole is irreducible to the sum of the meanings of individual words, sentences or ideas. The latter are interconnected into an expressional whole in which the implicit meaning of the overall composition contextually frames and endows individual ideas with holistic shades of meaning. Modern songs possess a higher qualitative significance than the bare sums of their textual and musical segments put side by side, whilst the qualities of any chord or musical composition do not simply represent sums of comprising tones and instrumental sections, respectively. Tonal harmonies and rhythmical patterns give rise to holistic qualities that could not be expressed in terms of the sums of constitutive elements of the musical piece. John Stuart Mill observed in the 19th century that 'the chemical combination of two substances produces a third substance with properties different from those of either of the two substances separately, or of both of them taken together'³. For example, nutritious molecules of table salt present chemically bonded combinations of atoms of sodium and chloride that are in their elementary forms toxic to human organisms. Another example from the field of chemistry stresses out how micelles that contain more than one surfactant often form at lower concentration than any of the critical micellization concentrations of the pure constituents⁴. As far as the field of biochemistry is concerned, we can be reminded that the stabilizing free energy per amino acid residue in proteins is much lower than their average thermal energy. This means that individually the interactions between amino acids are insufficient to maintain the native conformation of the given protein, although taken together in the protein as a whole, they miraculously are⁵.

The resulting topological entropy of commutating dynamics is, likewise, smaller or equal to the entropies of the individual systems, whereas an encounter of two random, chaotic reflections may result in a surprising ordering⁶, just like a combination of two individually losing von Neumann's games may present a reciprocally winning choice⁷ and two paired zero-capacity quantum channels can reliably send information, although each one of them alone is absolutely noisy and useless⁹³. Numerous macroscopic physical qualities (such as temperature, pressure, color, mechanical strength, viscosity, etc.) and the laws that explain macroscopic phenomena (such as the laws of thermodynamics, classical mechanics, radioactivity, chemical kinetics and other explanatory frameworks that tend to draw upon the substrate of probabilistic effects that

arise from the nondeterministic behavior of physical entities within specific aggregates thereof) may be considered as manifested only through relationships between a measuring instrument and an assembly of interacting physical entities of certain kind. By applying the conceptual framework of quantum mechanics or string theory, the basic physical qualities of classical science, such as mass, space and time could be expressed as harmonies of vibrational modes of superstrings or of superposition and collapse of wave function states, respectively. Simple cybernetic systems that involve autocatalytic cycles participating in competitive interactions with their surroundings may be illustrative of the ability to influence the behavior of constitutive elements through holistic ‘top-down’ effects⁸, while numerous hypotheses of the consciousness-induced wave function collapse and consequent semi-steering of the evolution of quantum complexity of physical order by one’s cognitive choices may also be mentioned in this context⁹⁻¹⁶.

The products of natural, multisensory perceptions are irreducible to: simple sums of impressions of individual sensory organs; individual perceptual events disconnected from their historical context; description schemes that implement complex networks of biochemical reactions. Creative communications can give rise to ideas that were not noticed by any of the participants earlier, which implies that specific problems could be solved only through common, interactive and complementary attempts of collectives of beings. In that sense, the whole dance of life may be considered as a ‘living proof’ of how uncertain and labile segments can give rise to a certain and stable flow of the evolutionary progress¹⁷. Therefore, probabilistic quantum fluctuations and intrinsic uncertainties give rise to complex and ordered molecular configurations; molecular entities in natural environments undergo random Brownian motion, and yet give rise to intricately organized, self-sustaining and evolutionary biochemical pathways; the latter comprise routinely made replication mistakes, and yet form stable and autopoietic, self-correcting biocybernetic networks. This all provides human contemplations with the hope that uncertainties, non-definitiveness and insecurities in comprehension of experiential phenomena may present natural aspects of the continual streaming of human race and the biospheric whole towards ever more wonderful and inspiring cognitive landscapes.

Numerous examples of symbiotic phenomena from the fields of biology and ecology may further illustrate the all-pervading holistic character of natural systems and events¹⁸. Closely huddled together, penguin colonies reduce the effective heat loss in proportion to the number of clumped organisms¹⁹. Flocked birds in their flight reduce the air resistance and increase individual sensitivities to alterations of perceived patterns in their visual fields²⁰. Plants typically have fungi and bacteria attached to their roots, where they assist the plant in the absorption of soil nutrients and their osmotic flow along the stem. Endophyte symbioses of virtually all plants and animals with microorganisms that help to increase the resistance to environmental effects and extend the adaptive ranges of the co-evolving species²¹ could provide a wide array of examples wherein biological ‘wholes’ achieve more than what the constitutive parts disjointed from the functional context of the whole would be able. Lichens are symbiotic partnerships between photosynthetic cyanobacteria and fungi that possess a remarkable capability of water absorption and stable adhesion. Photosynthetic and heterotrophic bacteria that live inside cells of specific organisms have been included in the explanations of evolutionary origins of chloroplast organelles in plant cells and mitochondria in other plant and animal cells^{18,22}. Some flowering plant species, including the ones from the family of orchids and the genus of sunroses, possess not only a symbiotic stem and the cellular structure, but the very seed structure is permeated with a synergetic symbiosis with certain types of fungi²¹.

In accordance with the standard definition in systems theory terms, first provided by George Henry Lewes in the 19th century²³, whereas the ‘resultant’ system properties can be represented in terms of sums of postulated cooperative forces, ‘emergent’ system properties are incommensurable and irreducible to relations among entities that figure as system ‘parts’ in preserving its unity. Approximations that are typically employed for the purpose of representing systemic wholes in terms of relations among the parts of the system and enabling an observer’s predictable and controllable interference with them can often be seriously simplified. In that case, there are risks that while looking in the backward comprehensional direction (that is, from the description to a novel understanding of the described system), we may falsely identify the approximate and reductionist models with the real organization of the system, and thus degrade one’s sense of wonder in facing the holistic order of natural systems to oversimplified, routine and primitive abstract representations thereof. However, the line between the resultant and emergent system properties is an arbitrary one, and depends on the empirical criteria of accuracy imposed by an observer and the contextual and intricate complexity of the relations involved in defining the analyzed system qualities. Because an observation of a hypothetic elementary quality requires at least ‘two nodes’ and ‘a change’ (i.e., a pair of entities and a relationship) in the realistic domain of co-creation, coupled with a measuring instrument (that provides more of the ‘pair of nodes and a change’) in the cognitive domain of co-creation of experiential qualities, and as such inherently leads one to form sets of harmonies that give rise to higher-order resulting qualities, all experiential qualities could be ultimately regarded as emergent/holistic ones. A comparison between at least a pair of perspectives is also required in order for any scientific or philosophical argument to be formed, which indicates a holistic character of even the most elementary scientific propositions. In that sense, individual ideas are insufficient to comprise the bases of any consistent explanatory networks, whereas at least a pair of logical propositions must be provided to initiate edification of any solid explanatory basis. Each idea – as much as any existential quality - may be picturesquely represented as stretching its ‘arms’ to relate to the context of its existence, whereby the latter gives rise to and sustains its meaning and pragmatic purpose. Referential notions of a given scientific language need to be defined and adopted in clusters²⁴, whereby not a single scientific proposition could be strictly compared with experience without taking into account the whole logical system of reasoning that it belongs to. Willard Quine correspondingly perceived each logical system of reasoning as an object whose outer boundaries correspond to its contact with the experience, and in which each modification of any logical thread necessitates a modification of all the other threads within the system, including its overall state²⁵. Such an assumption has presented the basis of Quine’s model of conformational holism, developed as a response to the problems and paradoxes arising out of the reductionist settings of logical positivism. With such a holistic overturn, the obscured boundaries between physical and metaphysical domains may become acknowledged as natural and essential for the evolution of human knowledge, so that the ethical and aesthetical character of cognitive experiences may be considered once again as inherent to the foundations of scientific reasoning and the conceptual organization of experiences in general.

Instead of being regarded as only ‘inner’ and basic, imaginative inspiration, emotional patterns and ethico-aesthetical aspirations that stand at the basis of scientific criteria of selection during the stages of observation, analysis and deduction may be also considered as emergent qualities that occur on higher organizational complexity levels compared to the ones at which interactions of entities that constitute the biophysical structure of a being may be physically observed. As all other emergent qualities that emanate from the complex constitutive nonlinear

networks of interactions and exhibit certain levels of autonomy in their behavior, the qualities of mind and emotions are also irreducible to and thoroughly unpredictable from explanations that take into account only lower, constitutive organizational complexity levels. In order to obtain a more complete depiction of the constraints involved in the movement, interaction and evolution of physical entities, irrespective of their size and complexity, these 'higher principles' would need to be added to physicochemical laws that are nowadays used alone to explain the complete web of emergent qualities of human beings and humanity from the 'most fundamental', although exceptionally reductionist perspectives. Such a holistic reformulation of the principles of causality would correspond to reintroduction of the Aristotelian concept of 'final causes' in scientific descriptions, once eliminated from there by the acceptance of causality implicit in Newton's laws of mechanics²⁶. Introducing the concept of 'final causes' and acknowledging the holistic nature of natural/experiential phenomena implicitly presents the process of sowing the seeds of ancient religious and ethical norms - according to which 'we become what we see' and 'we reap what we sow' - all over the fertile grounds of science and the general tradition of empirico-positivistic reasoning. Cultivating one's cognitive roots, permeated by the deepest tendencies, desires and aspirations, with bright, honest and clear visions of 'final causes' as ultimate destinations where one's world of experience is heading, may be acknowledged not necessarily as a subjective 'force' that would disruptively interfere with the empirical settings of scientific research, but as a complementary aspect thereof, that might provide ethical, aesthetical and imaginative creative instigations to the development of a rigorous and pragmatic reductionist program of science. Seeing the experiential world and fellow beings as bathed in and overflowed by 'heavenly clean' contexts of one's co-creation thereof thus equals spontaneous creation of boundary conditions that might guide their development and evolution in the direction of the envisaged cognitive balance and harmony. Reductionism-to-holism transition, as outlined herein, may correspond to a gradual adoption of the balance between logical rigor and metaphorical uplifts of inspiration in the realm of scientific and common reason, so that the invoked balance between logical and analogical aspects of reasoning might be subsequently reflected in a higher-order dynamic equilibrium between quantitative precisions and qualitative, systemic patterns in the methodological framework of scientific research.

Multi-, inter-, and trans-disciplinary approaches to investigation of natural phenomena, based on promoting not mutual exclusions, but complementarities among diverse perspectives (in terms of various scientific and humanistic disciplines) in the process of enrichment of higher-order conceptual frameworks for depicting and understanding physical phenomena, present natural consequences of adopting the holistic nature of experience. A growing need for interdisciplinary explanations of physical order can be exemplified by a hypothetical observation of a single molecule of water under different interactional contexts²⁷. Qualities that emanate from the interactions between individual molecules of water are known for their versatility, which has set the conditions for the evolution of the planetary life. In order to outline the behavior of water molecules in an aqueous medium, instead of focusing on the intricate molecular structure of water, one needs to take into account the quantum features of chemical bonds and physical, van der Waals forces, hydrogen bonds, and hydrophilic and hydrophobic interactions of the entire surrounding in which the investigated molecule is depicted. Electron clouds of atomic and molecular bonds are non-locally distributed in relation to the bound nucleons and are sensitive to the slightest changes in their immediate surroundings, which explains why in order for a chemical reaction to effectively take place, it is not enough only to bring the reactants into a close contact (as the classical chemical descriptions might have suggested), but an adjustment of

the whole physical context that surrounds the interacting entities in a delicate manner that would eventually induce the desired reaction, needs to be performed²⁷. Whereas such a contextual reaction sphere may be reasonably approximated to span only up to a nanometer in diameter in case of simple chemical reactions, it can be significantly more extended for reactions that occur in biochemical environments. Nevertheless, the behavior of water molecules could not be perfectly predicted even in some of the simplest physical settings by invoking only intrinsic quantum configurations and bonding effects with the nearest neighbors, due to an enormous complexity of calculations that need to precede these predictions, and a decrease in their accuracy as the consequence of the expansion of nondeterministic and probabilistic effects that follow any extrapolation of quantum size effects to macroscopic levels of observation (whereby one does not shift one's attention to aggregates of quantum entities – and this is when averaging of probabilistic effects takes place - but retains one's attention on the behavior of the observed quantum entities). Applying knowledge from the less detailed domain (compared to physics and quantum chemistry) of classical chemistry is frequently more practical in describing complex surroundings of particular reactions comparing to intricate physical schemes of interactions that produce analytically irresolvable nonlinear effects whenever many-body interactions become included in calculations. In addition to invoking physicochemical concepts related to pH, ionic strength, viscosity, capillarity, osmotic effects, surface tension, cohesion and adhesion, knowledge from the field of biology would be necessary for explaining the reasons behind the movement of water molecules in metabolic cycles at various levels of organization, ranging from the fine intracellular flow to transpirational flow of water along the xylem of vascular plants. A reference to the laws of thermodynamics might be drawn in order to explain the effects of heat on molecular behavior. Hydraulic, hydrostatic and hydrodynamic principles, related to the concepts of water density, buoyancy, viscosity, vorticity, Reynolds number and various complex streamline effects, would be normally employed in attempts to describe and plan the movement of water molecules with respect to solid bodies (as in the context of sophisticated naval navigation or the calculation of flux and rate of flow of water through pipelines or along river beds) immersed in water. Newton's laws of motion and gravity may become relevant in the context of explaining tidal effects, whereby in order to describe the movements of water molecules that are parts of a river stream or an ocean current, it may be necessary to consult data from the areas of geography, hydrogeology, hydrometeorology, oceanography and climatology. An overall scheme of atmospheric and planetary movements of water molecules in biogeochemical cycles would require a reliance on the studies of general Earth science, geophysics and ecology.

In any case, predicting the movement of an individual molecule of water that is a part of a river stream might not be possible unless one familiarizes oneself with the direction of the river flow. If we become solely focused on the effects of interaction between the investigated entity and its nearest surrounding, the overall molecular movement in accordance with the river stream would seem either random or channelized by an unknown set of limiting conditions. Qualitative features of any natural entity are, therefore, determined not by its inherent structure or organization solely, but by the holistic set of interactions that figure between its intrinsic structural order and the overall context of its existence. However, just as the meaning of a linguistic scripture becomes co-created by an encounter between the space of provided interpretational options on the realistic side and an active imposition of interpretational contexts on the subjective side, the observed form of any perceptually co-created detail of one's experience arises at the intersections between epistemological/experiential/subjective and

ontological/natural/realistic contextual spheres of the observed system's existence. Therefore, whereas each particular detail of one's experience on one hand 'holographically' reflects patterns and 'voice' of the natural whole, on the other hand it reflects the essence of the subject's interpretational context. The latter can be metaphorically depicted as a 'blue sky of mind' that through its brightness or cloudiness endows the features of one's experiential reality with enlightening or shadowy nuances, respectively, and stretches between the ground points of epistemological horizons defined by the subject's deepest values, intentions and aspirations that quietly and imperceptibly guide one's perceptual and reflective co-creational 'drawing' of experiences.

Just as the movement of individual water molecules in a river is not determined by their intrinsic structural patterns only, but by the relations between the latter and the overall context of planetary ecological patterns, neither could physical qualities be defined acontextually, i.e., without taking into account the complete environment of the entities attributed with specific qualities. The notion of 'energy' – being one of the basic physical qualities within the empirical tradition of scientific reason - could not be defined or employed reasonably with paying one's attention only to relations that constitute the system attributed with the quality of energy. Instead, the qualitative concept of 'energy' needs to be used in reference to the overall spectrum of potential effects that arise from interactions between a given system and its environment during their co-evolution in space and time (although in practical aspects, this endless range of effects and the corresponding infinitely spreading character of system qualities become subdued to finite sets of relations by means of convenient approximations) on the realistic co-creational side thereof, and to an observer's biological, cognitive and epistemological bases of the applied conceptual systems of reasoning in which the given qualities become pragmatically incorporated on the subjective co-creational side. Energy could be, thereupon, regarded as the potential of specific quantitative contributions of a given system to alterations of the order of its environment, whereby the classical biochemical truism which states that 'structure defines function' might correspondingly be modified to a conceptual representation according to which the function (i.e., reflection, relation, way) of a system as a harmony of relations through which the system interacts with its surrounding and as such 'spreads' its inherent qualities outward, could be defined only through an observational interference between the subjective/interpretational and realistic contexts, so that the area of the intersection may provide the functional depiction of the observed system in terms of dynamic and co-transforming relationships between the observed system and its overall, partly subjective and partly realistic existential context.

The analogy of linguistic expressions in understanding the holistic features of Nature

Duke Mu of Ch'in said to Po Lo: 'You are now advanced in years. Is there any member of your family whom I could employ to look for horses in your stead?' Po Lo replied: 'A good horse can be picked out by its general build and appearance. But the superlative horse - one that raises no dust and leaves no tracks - is something evanescent and fleeting, elusive as thin air. The talent of my sons lies on a lower plane altogether: they can tell a good horse when they see one, but they cannot tell a superlative horse. I have a friend, however, one Chiu-fang Kao, a hawker of fuel and vegetables, who in things appertaining to horses is nowise my inferior. Pray see him.' Duke Mu did so, and subsequently despatched him on the quest for a steed. Three months later, he returned with the news that he had found one. 'It is now in Sha-ch'iu,' he added. 'What kind of a

horse is it?' asked the Duke. 'Oh, it is a dun-coloured mare,' was the reply. However, on some one being sent to fetch it, the animal turned out to be a coal-black stallion! Much displeased, the Duke sent for Po Lo. 'That friend of yours,' he said, 'whom I commissioned to look for a horse, has made a nice mess of it. Why, he cannot even distinguish a beast's colour or sex! What on earth can he know about horses?' Po Lo heaved a sigh of satisfaction. 'Has he really got as far as that?' he cried. 'Ah, then he is worth a thousand of me put together. There is no comparison between us. What Kao keeps in view is the spiritual mechanism. In making sure of the essential, he forgets the homely details; intent on the inward qualities, he loses sight of the external. He sees what he wants to see, and not what he does not want to see. He looks at the things he ought to look at, and neglects those that need not be looked at. So clever a judge of horses is Kao, that he has it in him to judge something better than horses.' When the horse arrived, it turned out indeed to be a superlative horse.

Lieh-tzu, *Taoist Teachings*

A detailed reflection on the semantic structure of linguistic expressions can be considered as analogous to an investigation of the holistic organization of natural systems. The lowest organizational level proposed in this example corresponds to either the basic sound frequencies of phonetic expressions or the elementary alphabetic contours of syntactic scriptures, whereas through successively more intricate organizational levels of letters, words and sentences, one may reach the level of meaning of the whole expression as the highest level of its semantic organization. In accordance with Hans-Georg Gadamer's representation of the process of semantic interpretation of linguistic expressions in terms of an encounter between contextual 'horizons' provided by an author and a reader²⁹, interpretations of experiential phenomena may in general be represented as encounters between a subjective, interpretational context brought forth by an observer and a realistic context of interactional patterns in which an observed system figures.

Principles behind the construction of each of these levels of organization are conditioned, but not caused by the rules that govern the principles of organization at lower constitutional levels. Letters become combined into words in accordance with a familiar vocabulary and/or conventional terminology, whereas the words become incorporated into sentences in accordance with grammatical rules. Individual sentences become arranged into a complete textual composition in accordance with a general 'picture' of meaning that the overall expression is meant to invoke in the reader. And just as the overall structure of a book, spanning from its introduction to epilogue, defines one, 'realistic' co-creational side of the subsequent cognitive construction of the book's meaning, the whole wide world as a 'book of life' – in relation to which the scope of one's mind presents a 'bottle' in an endless 'sea' of the cognitive potentials of life - defines one, realistic co-creational side of the qualities of human deeds, which despite the fact that they may seem negligible, hopeless and desperate when coupled with another, subjective co-creational side in the domains of individual experiences, may still be imagined as carrying beautiful meanings and sources of inspiration in light of the whole.

The reductionist attempts to explain the essential cognitive and other holistic qualities of the 'book of life' in terms of sole elementary physical concepts would be analogous to one's attempts to explain the process of formation of linguistic expressions by referring only to the rules of grammar and alphabetical constraints, while disregarding the semantic and ethico-aesthetical criteria that may be, however, considered as fundamental to creation and interpretation of all reflective and linguistic patterns in the domain of human cognition. Each complexity level of a book or any natural system may be, therefore, considered as being under a

'dual control'³⁰ of the organizational levels 'above' and 'below'. The corresponding analogy of encounter between 'top-down' and 'bottom-up' organizational aspects as inherent to natural systems may be found in numerous religious traditions worldwide, including the Christian symbol of the cross, Hindu Shiva-Shakti, Purusha-Prakriti, Pingala-Ida and Brahman-Atman polarities, and Taoist Tao-Te polarity. For example, vegetative neural and sensory features may support life at lower biological levels of organization, although they are susceptible to the effects of higher organizational levels, including voluntary responses, conscious behavioral patterns and reflective intelligence, so that the former traits may also reflect the human potential for delivering responsible choices and exhibiting free will decisions. The representation of each experiential/natural quality as a relation, a way or an encounter, previously evidenced during the discourse on the co-creational nature of experiences, might be additionally reinforced through adopting such a 'crossing' holistic character of natural phenomena, according to which patterns of behavior and evolution of all natural systems, irrespective of their size and complexity, become 'drawn' through a dynamic interplay between lower and higher organizational levels that the system comprises and constitutes, respectively.

As each biological complexity level of natural order - ranging from atomic and molecular to cellular, organismic, social, ecosystemic and biospheric degrees of freedom - possesses a specific autonomy in the co-creation of qualitative patterns (regarded as relations through which the system spreads its essence towards the overall context of its existence), the balance between an 'adventurous' attitude of searching the 'ladders' for one's ascending towards more holistic and divine perspectives of natural order and a 'teaching' attitude of devoted descending towards lower organizational levels may present the key to harmonious, simultaneously evolutionary and sustainable involvement of the individual system in the organizational whole of Nature. In other words, 'staying' and being devoted to the cognitive bases of one's biological and social tradition, and yet 'moving', questioning and stretching one's senses of wonder towards ever wider contextual ranges, presents a crucial balance that arises as a consequence of such a 'crossing' holistic nature of being. The evolutionary informational enrichment of natural organizations could be correspondingly reflected in ever more intensive and profound dynamic balances between 'sense of wonder' and 'spirit of Love', which respectively correspond to an awesome admiration that frames one's reflections on the natural order, propounded by the will to learn of the Way of the whole and meet the 'religious' principles underneath the processes of experiential co-creation, and an active cultivation of sympathy and compassion towards fellow beings and experiential details, together with one's dedication of actions and deeds to their cognitive enlightenment and spiritual salvation.

One of the main observations that can be made from the semantic analysis of linguistic expressions presented hereby is that with improvements of one's knowledge of communication through specified linguistic concepts, the subject's attention becomes gradually diverted from alphabetical contours and individual letters and words to semantic levels at which 'holistic' meanings are being created. The nature of learning according to which the learned patterns subside into unconscious cognitive domains and as such become incorporated in the subject's repertoire of spontaneous actions, is compatible with the idea that everything that the subject notices and is aware of in the perceptual and reflective domains of his consciousness, presents a profound co-creational motif and invitation to learn and correspondingly evolve, so that the main purpose of the cognitive existence can be identified with learning and evolution. In accordance with this point, the ideas proposed by Erwin Schrödinger may be invoked: 'Mind (i.e., consciousness) is related to the learning processes of living matter; the things that it knows how

to do are unconscious... Conscious become only those modifications that are still in the learning phase, until, much later, they become inherently affirmed, well learned and unconscious traits of the given species. Simply saying, mind (i.e., consciousness) is the phenomenon from the field of evolution. Mind illuminates itself only where it evolves, and only when it develops and creates new forms³¹. If one attempts to decipher a mysterious scripture encrypted with an unknown code, the observer's attention would be limited to contours of individual letters that constitute the text and the semantic experience would be constrained to lower organizational levels of the linguistic form, so that the meaning of the whole would stay out of one's comprehensional reach. However, a reader that is familiar with the given language would be expected to read the script without letting his attention linger on individual letters and words. He may invoke the meaning of the text by, so to say, 'looking through' the individual signs and words, so that he may be typified with the ability of exhibiting 'from-at' knowledge (i.e., from syntactic to semantic levels of textual organization), as opposed to the former reader who might be characterized as possessing only 'at' knowledge³⁰. Such 'looking through' the directly perceived, co-created experiential patterns and entities to higher and 'wholer' levels of their meaning presents an essential trait of cognitively evolved, wise observations and reflections on the patterns of experiential reality, as Lieh-tzu's story about a profound selection of horses³² at the opening of this section may have illustrated. The abilities to penetrate from the level of superficial and apparent, 'tree-like' features and simple 'signs' of one's experiential reality to the level of co-creation of their holistic and emergent metaphorical meanings, permeated by 'forest-like' features and 'signs of the times', presents an essential cognitive aspect of religious, meditative and deeply 'intuitive' insights into the nature of subject's epistemological foundations and the divine messages of 'hidden reality' that pervade the world at all complexity levels of its co-creational organization. Benevolent linguistic coordination of experiences at the social level implies aspirations of participants to penetrate from the lower strata of obvious and apparent patterns to the higher ones permeated by emergent qualities and meanings, as can be exemplified by either the ethico-aesthetical character of one's penetration from literal meanings to metaphoric directives and an implicit beauty of horizons at which linguistic expressions point in the domain of social communications, or an 'angelic' cognitive capability to soar from the lower observational levels that may be seemingly pervaded by displeasing and cumbersome experiential features to aerial perspectives that may through their 'sky-wide' contexts endow the former patterns with majestic values for the world of one's experience.

Dynamic interplay between subtle shifts of one's cognitive focus from 'the trees to the forest' and *vice versa*, and the corresponding balance between analytic and synthetic aspects in one's comprehension of experiential reality, may be marked as essential features of a wholesome attention and reasoning. However, an endless set of possible, partly subjective products of the co-creational 'synthesis' of lower complexity levels and local entities of experiential/natural order into holistic wholes and non-local patterns of meaning, is reflected in a corresponding infinity of potential methodologies that may be used to depict emergent cognitive phenomena in terms of a pure 'at' knowledge. Both inquiring cognitive orientations 'downward' and 'upward' predispose the subsequent synthetic/analytic descriptions to remain incomplete and endlessly face natural/experiential 'rainbows' in terms of cognitive landscapes marked by inability to attain final answers to the riddles of natural order and an unavoidable existence of horizons in the domain of human knowledge, whereby the latter may on the other hand predispose the epistemological foundations that underlie the former descriptions to never-ending evolutionary dreams of 'treasures' and undiscovered 'coasts' of knowledge that these horizons encompass.

Due to the similarity of interactional patterns at various organizational levels of natural order, analytical investigation of any particular complexity level may provide an inquiring mind with a source of systemic, metaphoric patterns that may be applied at other, temporarily obscured complexity levels. For, a quantitative integration of lower complexity levels into consistent and complete higher-order conceptual wholes of holistic character is out of the range of human calculation abilities, as can be evidenced by the examples of partial and ineffectual contemporary attempts to describe human intellectual and emotional qualities by referring to atomic and molecular interactive patterns alone. An approximately analogous situation might correspond to one's attempts to understand the functioning principle of a computer program from the level of physical transformations that take place in the microprocessor. The patterns of electromagnetic interactions within the 'hardware' are, as in each holistic system, conditioned by the comprising structure, but caused by higher-order emergent qualities that may correspond, for example, to an algorithmic code of the installed 'software' operated by human users. Anyhow, instead of impelling one to limit one's interests to commanding routines that apply to specific complexity levels of a natural organization, parallel extensions of the spaces of possibilities for the development of all organizational levels of a given system and investigations of the correlations between various organizational complexity levels, irrespective of the system's nature - ranging from computing or scientific programs of reasoning to linguistic co-orientations of experiences in the provided examples - presents the way of understanding the nature of the investigated systems in a way that opens spaces for flexible modifications thereof in spite of the functioning inconsistencies that may be, on the other hand, regarded as inherent aspects of the dialectical advancement of user/technology and mind/Nature interfaces in terms of enriching the co-created experiential/natural landscapes and opening the doors for ascension and invigoration of ever more wonderful and affectionate holistic qualities of life.

The importance of cultivating clean and inspiring minds and enlightening thoughts and aspirations

'Ye fools, did not he that made that which is without make that which is within also? But rather give alms of such things as ye have; and, behold, all things are clean unto you'

Luke 11:40-41

'Though we may live in the society of the impious, there is no intimacy like the water and the lotus. The holy may ever live far apart, yet they rejoice like the moon and the water-lily'

Nagarjuna, *The Tree of Wisdom*

One of the major consequences of acknowledging the holistic nature of experiential phenomena is the corresponding accentuation of an all-encompassing importance of cultivation of harmonious, benevolent and inspiring thoughts, aspirations and emotions. For whereas the lower organizational levels condition the existence of higher-order organizational features, it is an integrative 'spirit' of creative activity that stretches from ascended and high-complexity systemic qualities 'downward' causing harmonious interactions at lower organizational complexity levels. In the other, 'upward' direction, it provides conditions for a harmonious evolution of more complex emergent qualities of natural order at even higher organizational

scales. Cognitive aspirations and emotions may, therefore, be considered as not localized and supervenient, epiphenomenal products of interactions of ‘elementary’ universal entities, but as influential ‘guides’ for both the ‘dance of atoms’ within and the co-creation of emergent emotional waves of the breadths of the Universe, on which fellow beings may harmoniously ‘surf’. Just as the acknowledgment of the metaphoric, co-orientational nature of scientific, linguistic and other communicational endeavors points to the subtle patterns of love and care as fundamental to flowering of all scientific disciplines and traditions of wisdom, the representations of natural order in terms of its inherent holistic organization invoke personal responsibilities for not only one’s apparent words and deeds, but for the finest patterns of one’s thoughts, emotions and desires. ‘For all is like an ocean, all is flowing and blending; a touch at one place sets up a movement at the other end of the earth’³³, as Father Zosima taught in Fyodor Dostoyevsky’s novel ‘The Brothers Karamazov’.

Cognitive features of living beings present emergent consequences of circular, autopoietic interactive organization of arbitrarily selected system components. Because biological systems react to environmental stimuli in accordance with their biophysical structure and correspondingly attribute specific and unique co-created meanings thereto, objectivistic aspects of reasoning and communication could cede place to the co-creative nature of experiences, which refers to inextricable higher-order idealistic/realistic and subjective/objective intersections of the respective experiential aspects. As a result, operationally closed neural networks as depicted in autopoietic conceptual frameworks cannot draw strict boundaries between ‘externally’ and ‘internally’ initiated aspects of the co-created experiential features³⁴. Cognitive products of imagination and featureless, aspirational visions may be, therefore, expected to affect the constituent organizational levels in the same extent as primary perceptive sensations of the subject’s experiential reality. Also, in accordance with the observation that, due to an intensive cause/effect overlapping, initial causes of any specific activities within a complex cybernetic circuit could not be exactly distinguished, the active effectual intertwinement of higher-order and lower-order cognitive features proceeds with the similar level of mutual inextricableness and incommensurability. The effects of lower-level, physical and biological interactions on one side, and of elevated and sublime cognitive qualities on the other are, therefore, incessantly converging at all organizational levels of one’s being. Contrary to reductionist depictions of biological organizations as closed and insensitive to non-mechanical effects, living systems may be due to their holistic organization in which emergent qualities continually exert influence on lower organizational levels, considered as subject to non-mechanical effects. The importance of cultivation of inspiring, creatively instigating and ethico-aesthetically awakening thoughts and emotions that integrate both constituent and global communicational loops in functioning towards the attainment of common, sustainable and evolutionary goals may be naturally derived from this point of view. In relation to one, ‘bottom-up’ biophysical co-creational side of biological and cognitive features of one’s being and experience, thoughts based on aspirations to produce harmonies ‘within’ and ‘without’ may, therefore, present the other, ‘top-down’ cognitive co-creational side that in the continual quest for balances between integrity and differentiation, and synthetic strength and diversifying, dialectical flexibility, partially outlines the pathways for continual, autopoietic re-creation of one’s well-being and a healthy outlook. Just as a sapient conductor of a symphonic orchestra improves the quality of its performance not through substitutive reformations and coarse manipulation of individual player’s traits, but through providing beautiful musical motifs that spontaneously arise aspirations of individuals to heartily engage in conjoint creative efforts, sane

reflections are typified not by aiming towards self-improving accomplishments by means of local and mechanistic interventions, but by invoking the healing threads that naturally reintegrate the being's internal patterns of communication and 'rays' of their relations towards the existential context through nurturing bright and glowing ideas and aspirations.

Changes introduced in one's natural environment metaphorically reflect changes established in the domain of one's reflective organization of the experiential world, and *vice versa*. Correspondingly, it may not be appropriate to expect improvements of informational landscapes of natural and social environments with neglecting advancements at the level of emanation of one's ethico-aesthetical cognitive patterns, and *vice versa*. Benevolent acting, therefore, provides conditions for profound 'seeing', whereas profound seeing provides conditions for beneficent acting. Hence, in accordance with Mahatma Gandhi's thought that 'we need to become the change that we want to see in others', the original presentation of the Club of Rome's 'Limits to Growth' model ended with the following remarks: 'The last thought we wish to offer is that man must explore himself - his goals and values - as much as the world he seeks to change. The dedication to both tasks must be unending'³⁵. Human values as cognitive 'treasures' that provide sources for enriching subjective interpretational contexts seem to accordingly 'co-evolve' in the co-creational correspondence with the realistic contexts of the respective environments. A simple imagination of contemporary creatures conveyed to the contexts of past social and communicational eras might lead one to conclude that advancements in the domain of informational variety have been followed by spiritual and ethico-aesthetical developments of individual beings, and *vice versa*. As a result of the co-evolutionary nature of being/environment and mind/Nature interactions, truly viable actions for individual beings may be identified as viable for Nature as the being's overall existential context, which may be supported by numerous ecological examples³⁶. For example, in order to promote a long-term sustainability and viability of actions, increases in flexibility of individual systems (unlike the ones witnessed nowadays in terms of improvements of the human living comfort, but on the account of degrading the planetary capacity to sustain diverse life forms), in accordance with Heinz von Foerster's ethical imperative which identifies ethical acting as the one that 'increases the number of options'³⁷, need to be encompassed in the context of an ever larger Gestalt and an ever more intricate and comprehensive systemic entirety. A prudent 'ornamentation' of picture frames in terms of its overall contextual surrounding is thus complementary to the sole painting efforts, so that a fine balance between the two marks the potentials for provision of inspiring co-creational encounters in which 'eye' creates the picture, but the picture also 'creates' the eye, to be brought forth.

Sublime ethico-aesthetical criteria for actions and reflections are inherently related to preservation and enrichment of environmental and cognitive contexts of one's existential and reflective patterns. Stewardship of the contextual character of one's existence corresponds to sustainable upbringing of one's own being; 'for the temple of God is holy, which temple ye are' (Corinthians I 3:17), as St. Paul the Apostle argued. In accordance with the acknowledged co-evolutionary balance between competitive individualism and cooperative symbioses that seems to pervade ecological systems in general, it may be observed that both an exceeding accentuation of the importance of individual survivals and self-growth with disregard of one's existential environment, and an abandonment of one's sense of self-responsibility and individuality on the account of immersion into pre-standardized social norms present unsustainable alternatives, whereas relating ethical norms of conduct with the balance between self-improvements and prosperity of fellow beings may present the ultimate sustainable/evolutionary choice. In

comparison with other species, humans are endowed with extraordinary mind-reflection capabilities, whereby a mindful intensification thereof might be considered as corresponding to the development of careful and cautious attitudes pervaded with ‘turning back’ and flexibly revising one’s methodological approaches and foundations of reasoning, with the purpose of orienting one’s cognitive ‘walk’ on the path of evolution of mind and Nature towards ‘sun-rising’ epistemological contexts, typified with an enlargement of the existential domain which a being considers as his own world, expansion of the sense of self-responsibility for variety of experiential details, and transformation of emotions to empathies and passions to compassions (until a fine balance between the two is reached). Autopoietic organization of biological systems wherein system components serve the role of continually re-creating each other, and the depictions of physical entities in terms of relations that they ‘spread’ towards realistic contexts of their existence in the framework of quantum field theory, may provide subtle spurs for the propagation of ethical ideals that emanate from holistic natural/experiential order presented herein. In contrast to reductionist conceptions which state that cognitive qualities of human beings arise as passive, supervenient epiphenomena without capabilities to partially direct and harmonize the functioning principles of the constitutive organizational levels, the concept of holistic co-creation of natural/experiential events according to which human minds as emergent natural phenomena may be depicted as ‘inflating’ cognitive spheres whose ontological centers of existence ‘spread’ their cognitive ‘arms’ to encompass ever wider natural breadths, scopes and distances, all until cognitive creatures as ‘starry children’ become, so to say, One with the whole Nature in the course of their co-creational evolutionary flow, may be proposed.

Living creatures as holistic systems

‘Many inhabitants of the coast liked seagulls. Every morning they would enter the waters and swim towards an open sea to meet them. Hundreds of seagulls flocked about them. One day someone said: ‘I am told that seagulls swim about with you; catch one or two so that I can play with them’. The next morning they headed towards the sea. The seagulls only wheeled about in the air and did not alight. In a perfect speech, there are no words. In a perfect act, there are no movements. What a wise man knows, is a general locus’

Lieh-tzu, Taoist Teaching

‘Beautiful is only that which when attempted to be described, all languages become silent’

Al-Ghazālī

The holistic nature and biological foundations of cognitive phenomena, conjoined with the knowledge of all scientific descriptions as ‘drawn’ on the substrate of experiential phenomena co-created through interactions between beings and the corresponding natural environments, suggests that reductionist and merely quantitative explanatory approaches could not present the final points in scientific representations of nature/understanding³⁸, but only an assisting tool that may provide solid bases for a harmonious evolution of human knowledge in a dynamic, mutually accentuating and supporting balance with qualitative and narrative representations of experiential events. In comparison with the classical scientific representations of life forms as based on their inherent deterministic evolution in accordance with pre-established, closed, universal, mechanistic, reductionist and time-symmetric physical laws,

representations of life that emerge from the perspectives of complexity science correspond to the ones in which living creatures are characterized by an inherent indeterminism, effective irreproducibility, ontogenetic and evolutionary unpredictability, structural irreversibility, complex interplays between asymmetry and symmetry, final, holistic causality (i.e., not only effective Aristotelian causality) and contingent phenomena^{39,40}, so that the fundamental explanatory principles in scientific comprehension of cognition and life could be primarily related not to substances, quantities and pure forms, but to qualities as relationships and harmonic patterns of interactions.

Whereas the physical laws applied in explaining behavior of natural systems from the classical points of view are time-reversible, living beings are memory systems in which discontinuous irregularities that arise as the consequences of their ontogenetic and evolutionary flows become ingrained in form of inherent structural and dynamic patterns, and as such could be represented only as historical, irreversible systems. The postulated reversibility of natural phenomena is intrinsically correlated with the conception of reductionist natural order, according to which natural systems are represented as composed of elementary 'bricks' that may be reassembled without losing any significant system properties thereby. However, 'who would study and describe the living, starts by driving the spirit out of the parts; in the palm of his hand he holds all the sections, lacks nothing, except the spirit's connections'⁴¹, as Johann Wolfgang Goethe observed. Despite numerous observations of the contextual aspect of definition of system qualities as implying an irreproducible and unique character of all physical and biological phenomena, the idea of redundancy of natural systems - as following from the classical empirical representations of life processes - still dominates the domain of contemporary social understanding, wherein mechanistic, duplicating reproductions, uniformities and rigid standardizations are exceedingly pronounced on the account of neglecting the balancing aspects of specialness, originality and innovativeness, and as such frequently induce unbalanced cognitive states, either in the sense of over-compliant, unquestioning, programmatic and self-irresponsible, or unconditionally opposing and divergent, over-independent, mentally and emotionally isolated and tradition-disconnected cognitive and behavioral attitudes. Sole epistemological attempts to interrelate 'parts' in search of the 'whole'⁴² thus frequently take hold of contemporary approaches to understanding, while disregarding the complementary holistic observations that start from the 'whole' and consequently notify 'everything at the right place', the 'whole' reflected in each experiential 'part', and consider every moment and detail of one's experiential reality as a perfect co-creational response of the divine natural whole to one's deepest epistemological questions that stand at the foundations of the cognitive mindsets that correspond to one's current stage in the cosmic narrative of evolution of being and spirit.

From the perspectives of lower organizational levels of natural systems, qualities and phenomena that emerge at higher complexity levels of the systems' organization are typified as original, unpredictable and indefinable. Mathematical discourses of game theory have resulted in conclusions that stable consistencies could not be identified as long as the behavior of one systemic component remains dependent on behavior of others⁴³, which implies that the attitude of calculating 'the best possible move' within cognitive algorithmic schemes of conduct ought to cede place to optimizing balances between algorithmic/logical aspects of reasoning and metaphoric, inspirational and intuitive facets in the domain of creative management activities. Just as in the game of chess against a skillful opponent one can typically predict not the exact following moves (because of the enormous complexity of preceding calculations), but only the general trend behind the strategic development in the course of the midgame, despite the fact that

the succession of an observed system states can hardly be guessed in attempts to faithfully depict complex, autopoietic or mathematically iterative systems, general patterns of behavior and expression as a whole can often be prefigured. However, the same unrepeatable character of periodicity/novelty interplay that characterizes all natural systems simultaneously presents the basic evolutionary drive at the level of both informational and spiritual development of being. Whereas the abilities to calculate ‘the best possible move’ would gradually extinguish the most gracious human attributes, inability to attain perfect predictions by means of pure calculative methodologies invoke the need for logically-metaphorical attentional balance to be placed upon wide contextual ranges of possible effects of one’s actions (with spontaneous consequent designation of not short-term and tricky, but respectful, vigilant and elegant, long-term positional moves), previously annotated as a key to a provident reasoning.

Despite the fact that emergent properties can be formally acknowledged from investigations of global dynamics of interactions between assigned ‘parts’ of complex mathematical models, only conditioning effects (but not causal effects as well) in whole ↔ parts relationships could be demonstrated and approved, and as a result, the pathways of evolution of any partially autonomous cognitive system inevitably remain outside the scope of one’s potential to exhibit a perfect control thereupon. The non-redundant character of natural ‘entities’, as derived from the concept of contextual definition of spectrum of qualities of the co-creatively outlined experiential wholes, altogether with the corresponding necessity to employ an infinite number of variables to reflect qualitative infinities that each natural entity consequently abounds with, traces us back to Sherlock Holmes’ problem-solving instruction, according to which ‘one’s ideas must be as broad as Nature if they are to interpret Nature’⁴⁴. In other words, there may be no conceptual methodology that can provide perfect representations of biological systems other than to re-create not only the entire biological system in question⁴⁵, but the whole wide world that enfolds the context of its existence in terms of a ‘cognitive celestial sphere of starry sparkles’ that arises as the consequence of the co-creational encounter between the observer’s epistemological sphere of questioning ‘rays’ of knowledge and the system’s ontological sphere of qualities ‘spread’ towards the rest of the world.

Cognitive phenomena and other emergent biological qualities are being continually re-created by the self-productive circular organization of internal organismic relationships. Such an inherent nonlinear network of relations provides an intrinsic organizational ground for bifurcational and ‘chaotic’ phenomena, wherein the majority of seemingly apparent and routinely predictable causal interactions cede place to a highly sensitive knowledge according to which ostensibly minor and negligible effects can produce crucial, all-encompassing and paradigmatic changes in the organization of the system, whereas seemingly tremendously significant effects can end up being dampened and immersed in inexorable, homeostatic and equifinal⁴⁶ feedback pathways of the organism. Because small variations in initial conditions can result in significant deviations in the outcomes, biological systems are amenable to ‘butterfly’ effects⁴⁷, and as such are in concert with Henri Poincaré’s visionary idea that ‘small differences in the initial conditions may produce very great ones in the final phenomena’⁴⁸. In that sense, it is worth recalling that ‘not dictators, armies, and police forces, but the changing values and ideals of people are the butterflies that, flapping their wings, determine which way society will grow and develop; it is up to each of us to flap our wings and to launch our bifurcating societies along a humanistic evolutionary path’⁴⁹, as Ervin Laszlo observed. On the other hand, an enormous sensitivity to initial conditions, typical of all nonlinear, networked and thermodynamically non-equilibrium, homeostatic systems, may provide the cornerstone for transcending the effects of

averaging and assimilating quantum fluctuations with the transition to macroscopic scales⁵⁰, and opening the door to an acknowledgment of the ‘real-life’ significance of ‘spooky’ quantum effects^{51,52} and the ‘quantum sea’^{53,54} that may present the physical basis that reflects the co-creation of experiential/natural phenomena in the spiritual interaction between mind and Nature. In addition, the tremendous sensitivity of biochemical systems to initial conditions, which regularly induces irreproducible scientific experiments, may present implicit invitations not for a professional R&D despair, but to an exploratory excitement which emerges from acknowledging significant deviations in experimental outcomes caused by seemingly negligible variations in initial conditions as inherent drives for fine enrichments and parallel R&D ramifications of conceptual, cognitive and techno-environmental informational landscapes.

Biological systems are thermodynamically open and far-from-equilibrium physical organizations, and according to Ilya Prigogine’s representation of living systems in terms of ‘dissipative structures’⁹⁴, distancing of a system from an equilibrium state corresponds to an increase in the degree of its complexity, and consequently to a higher degree of nonlinearity and insolvability of mathematical equations required to describe it. The cyclical arrangement of autopoietic components of life is inherently linked to the purpose of maintaining high levels of sensitivity to environmental stimuli. All sub-cellular processes, including DNA replication and transcription, selections of genetic expressions and enzymatic and other macromolecular patterns of activity, therefore ingrain operationally closed, nonlinear and iterative autopoietic networks, but are also incessantly open to internal perturbation by means of environmental impulses. While the interplay between thermodynamic openness and the internal homeostatic character endows biological systems with the potential to perform work and autonomously maintain and develop their perceptual representations of experiential realities, it also leads to resistance of biological systems to descriptions in terms of closed sets of mathematical equations.

In order to avoid ‘anarchistic’ consequences of over-subjectivistic incompatibilities of descriptions derived from and referring to diverse explanatory standpoints, the quantitative methodology of scientific communication, permeated by the implicit representation of numbers and mathematical operations as independent of the perspective of their application, becomes employed. However, the process of transformation of experiential features to corresponding mathematical models that would be independent of subjective points of view comprises a pair of important implicit assumptions^{55,56}. The first is related to the fragmentation of experiential features into entities (as the basic presupposition of reductionist worldviews), whereas the second belongs to the assignment of finite sets of qualities to these entities, which will present their interactional causes. In the linguistic domain, such a categorization would correspond to classification of syntactic notions to nouns (as entities), adjectives (as qualities), and verbs (as interactions). Whereby entities are in mathematical models typically represented as points, inherent qualities and actions figure as specific numerical values, so that the individual entities may be interchangeable under specific circumstances. The corresponding models of natural events, irrespective of their complexity, become attributed with redundancy, which subsequently justifies the misleading acontextual explanations of experiential phenomena.

Whereas in physical systems that exhibit thermodynamic equilibrium states, molecules could be approximated as almost independent entities⁵⁷, the same entities incorporated in cyclical self-organizational patterns of biological processes may display ‘dancing’ balances between order and freedom (as described by chaos theory which on one hand shows that ‘chaotic’ and random systems are characterized by spontaneous arising of periodically ordered patterns, whereas on the other hand seemingly identical, but only slightly diverging natural patterns can

through their evolution give rise to thoroughly different outcomes⁵⁸, thus indicating that every form of natural order comprises a dose of unpredictable developmental character, and that every information obscures some noise and *vice versa*; because only noise, randomness and obscured ‘hearts of darkness’ can give rise to novel information, ordered patterns and ‘glowing’ holistic qualities of cognitive beings, respectively), simultaneous autonomy and open connectivity (as described by Stuart Kauffman’s law of optimal connectivity²⁰, which stands in concert with the recent discovery of maximization of research creativity and effectiveness in the conditions that correspond to instigations of free communications between organizational members incorporated in the working environment with a moderate level of professional specialization⁵⁹), and an exceptional level of coherency and global cooperativeness. The stochastic character of genetic evolution and mental processes³⁶, a cybernetic principle which states that each novelty requires a source of randomness⁶⁰, and the observation that metabolic energy which ATP molecules store in their arrays of negatively charged phosphate molecular groups is not sufficient to deterministically drive the overall spectrum of intracellular reactions, but may be enough only to choose among specific molecular options of movement and interaction under the Brownian ‘surf’ of intracellular entities within the watery cytoplasmic medium⁶¹, may present evidence in favor of the stochastic character of all natural phenomena and pathways for development, where balances between pre-determinacy and randomness, order and freedom, logical strictness and metaphoric intuition need to be preserved in order to sustain harmonious lines of progress at all levels of emanation of life processes, including the creative aspects of human behavior, the development of ethical guidelines and dialectical patterns of reasoning. Similarly to the already mentioned droplet of water in its ecosystemic cyclical passing through the states of ‘strenuous’ sublimation and ascension towards clouds and free and spontaneous ‘sliding’ to the sea, the evolution of cognition and life is permeated by an analogous balance between order and freedom, stress and relaxation, effortful strivings to attain sublime values in one’s heart and quiescent descent of repenting tears of sadness and joy along one’s cheeks.

One of the preconditions for sustaining biological systems in homeostatic states is conservation of the relative slowness of metabolic reactions in comparison with typical, ionic or covalent chemical reactions, as can be illustrated by the example of reaction between oxygen and ferric ions of hemoglobin. Such an argument which relates the stability of biological self-organizations and an intrinsic interactional slowness presents the basis for proposing the molecular domain as the only one that can give rise to autopoietic interactions endowed with an inherent potential of spontaneous evolution into a wide diversity of living forms⁶². The effects of interactional slowness on one hand introduce additional computational complexities that defy standard approximations applied in case of practically instantaneous chemical recombinations, whereas on the other hand they provide organisms with ‘buffering’ capabilities reflected in a ‘dampening’ annihilation of extreme environmental effects and sudden deviations from homeostatic balances⁶³. To yield the conditions for blossoming of a genuine human intelligence, the relative slowness of processing of neural networks becomes compensated by an enormous amount of evolutionary ingrained iterations in neural signaling, ceaseless introspective regressions, revisions, reevaluations and self-corrections. Such iterative neural signaling activities naturally correspond to general capabilities to incessantly shift perspectives and observational contexts, and as such maintain biological computational abilities and natural intelligence at functionally superior levels compared to artificially intelligent systems⁵⁰.

Finite epistemological contexts that impose limits and outline horizons to the scope of one’s inquiry imply that each particular perspective of observation and reflection of

natural/experiential phenomena defines a boundary between the spectra of observable and unobservable qualities, and as a result inevitably provides an incomplete ground for the growth of a perfect, all-encompassing 'tree of knowledge'. It has, therefore, frequently been regarded that each categorization, remarked in the context of an infinite potential of possible contexts of its expression, comprehension and definition of meanings in terms of pragmatic directions it may point to, presents as much a prosperous and potentially enlightening as a creatively degrading and denominating pointer, which is why innumerable religious masters of present and past have used to repeat the essence of Lao-tzu's teaching: 'The one who knows, does not speak; the one who speaks, does not know' (Tao-te-ching LVI). Individual research methodologies and scientific disciplines correspondingly need to be complemented with various other observational perspectives and comprehensional conditions in order to gather more profound insights into the physical nature of the observed systems and expand the knowledge of the spectrum and dynamic features of qualities that they spread towards the contexts of their existence. For example, what may seem like a hierarchical, unilateral or linear causality from a single perspective and within specifically imposed contextual limits, might be noticed as a causal circularity or complex networked loop of effects by stepping to other perspectives and expanding the scope of the actual contextual frames of observation and understanding. Stretching the contexts of one's reflections and spreading one's views over larger fields of cause ↔ effect relationships might present an ordinary way to spontaneously observe and attain (through one's transpositions from the ideals of maximization of individual system variables defined by short-term goals to the ones of optimization of system variables conditioned by long-term maximizations of the number of options in the context of the whole) more sustainable and benevolent options for the development of one's being and understanding. For example, seemingly friendly and conciliatory decisions and agreements brought forth in relatively narrow contexts can often be discerned as corrupting, depraving and mutually degrading (on the system ↔ environment relationship) in larger contexts, whereas genuine devotions to create magnificent 'signs' for the evolutionary path of humanity may frequently be observed as interspersed with the instances of amoral, rude and negligent behavior, and nevertheless be seen as benevolent in light of the wider contexts.

An enormous complexity of intersections of numerous evolutionary factors⁶⁴ at any particular ecosystemic and biological organizational level implies that due to the limited and finite character of observational contexts that typify human modeling attempts, 'viable' effects could not be discerned from 'unviable' in the context of the natural evolution. Experiential patterns that in ordinary interpretational contexts may seem enigmatic, abstruse and evolutionary meaningless, in wider contexts may restore a graceful and divine significance, which might be the reason why after annotating the immanence of competitive ecosystemic interactions, Theodosius Dobzhansky proposed that 'nothing in biology makes sense except in the light of evolution'⁶⁵. Minute and modest deeds and intentions can, therefore, be realized as glorifying and immensely valuable in light of the whole, as the Christmas movie 'It's a Wonderful Life' may have signified. In that sense, it is the beauty of searching, questioning and providing answers that pretend not to deliver final answers to the riddles of life, but to expand the ranges of one's inquiry, that presents the intellectual source of human happiness. Truly stimulating and inspirational endings accordingly invite the beings to return to the beginnings once again, 'recognize' the 'same' initial inquiring landscapes in a novel and more profound context and thus open refreshing new lines for future progressive explorations.

Investigating tiny and inappreciable details of the world of one's experience in the widest imaginable contexts that correspond to a hypothesized development of the cosmic evolutionary tale may provide one with insights into novel, profound and far-stretching qualities that relate entities and beings of the world with each other. Nonetheless, such a widening of the causal/effective context which imposes comprehension limits to the spread of natural systems' relational qualities implies not only a perception of holistic effects through which the 'way of the whole' interferes with the behavior of the 'parts', but the opposite as well; namely, the possibilities for ever smaller and virtually negligible actions of autonomous 'parts' to produce significant effects on the path of the whole. 'There is not a single minute deed that is not performed for all times, once and forever, and for the sake of the whole humanity. Each act initiates a reverberation in the world, and this echo reverberates for thousands of years, never to be suffocated'⁶⁶, as Bela Hamvas accordingly professed. A consummate devotion to invoke innumerable divine signs and sources of cognitive evolution - dormant in every particular moment and detail of one's experiential reality - in facing all the co-created experiential wholes, irrespective of their size and complexity on one side, and fosterage of an attitude towards endless questioning and expanding the horizons of the co-created experiential contexts (until one's 'tear-dropping frame of the eye' comes to reflect Nature in its entirety) on the other side, may present the central balance immanent to the holistic thesis presented herein. Graceful tears depicted in angles of the eyes of frescoed muses in monasteries, as neat metaphors of the blended cosmic joy and Heavenly sadness within sacred cognitive contextual spheres, present reminders of angelic contextual 'tears', dormant in the frames of human worldviews, as the sources for spontaneous provision of the 'waterfalls' of divine beauty that may enrich and engrain the details and beings of one's experiential world with the 'sparkling waves' of creative inspiration.

Revisiting the systemic and contextual character of natural phenomena

'Les étoiles sont belles, a cause d'une fleur que l'on ne voit pas'

Antoine Saint de Exupery, *The Little Prince*

In the previous sections we have seen that experiential qualities emerge as results of the co-creational interplay between realistic spheres of relationships that figure in the interaction between observed systems and their ontological environment on one side, and subjective spheres of relationships that figure in the interaction between observed systems and the epistemological foundations of an observer's interpretational attitude on the other. Natural qualities may be, thereupon, regarded as inherently connected to the contexts of both their realistic/ontological existence and the subjective/epistemological interpretation. However, each one of these 'encountering' contexts presents an imperceptible 'one hand clapping', whereas an emanation of experiential features is preconditioned by their inextricable intertwining in a higher-order concept of co-creation of experiential qualities between realistic and epistemological existential spheres, which may correspond to the metaphors of being and environment in biological, mind and Nature in metaphysical, and spirit and God in theological conceptual frameworks.

Qualities attributed to the co-created, either perceptual or reflective experiential wholes, inevitably exist only as sets of relations to presupposed constancies that define the context of their realistic existence and experiential perception. Even hypothetically identical experiential patterns would 'possess' different inherent qualities under different contextual conditions of their reflective observation and/or primary co-creational perception. Also, because experiential

qualities emanate and become retrospectively defined through the co-creational interplay between the subject's active epistemological settings of the observational perspectives and the realistic sets of interaction that an observed entity is engaged in, a potential qualitative infinity as the consequence of the limitless space of interactional possibilities may be deduced. An absolute qualitative analysis of any natural system, regardless of its inherent simplicity, would - because of the needs to invoke the overall existential context thereof - require an introduction of an infinite number of variables in order to satisfy the criterion of perfect description⁶⁰. Such a proposition of qualitative infinity immanent in any particular experiential/natural detail may be observed as in concert with Immanuel Kant's idea of the infinite potential of observational possibilities (where, however, each particular side alone presents an undetectable *Ding an Sich*), the Buddhist belief in the existence of infinite possibilities dormant in the smallest natural fragments (denoted as *tê*, *toku* and *guna* in Chinese, Japanese and Sanskrit, respectively), and Benedict de Spinoza's opinion that 'every substance is necessarily infinite'⁶⁷. In light of the acknowledged contextual co-definition of experiential/natural qualities, the qualitative infinity of existential potentials and interpretational meanings as dormant in any co-creational encounter in the domain of one's experience may be consequently inferred. In view of this proposition, the thesis of the contextual co-creation of experiential qualities may be correlated with numerous other holistic thoughts that permeate the tradition of human wisdom. Visvasra Tantra has, for example, observed that 'what is here, is everywhere'; in Hindu Avatamsaka Sutra, the existential reality is depicted as a necklace of pearls where each one of them reflects the essence of all the others, implying that 'each object in the world is not solely itself, but includes all the other objects, so that in fact it is everything else'; whereby a brilliant Aboriginal saying goes on to remind us that 'we are merely on the way of learning how to survive the infinite'⁶⁸. Instead of redundant, 'coded' and reductionist worldviews based on proposing qualitative limitations (faced, however, with the problems derived from the reciprocal effects of quantitative infinities and computational complexities)⁶⁹ in the physical order of the Universe, every minute detail of one's experiential world may be regarded as a unique moment in the history of the Universe, and as a reflection of the contextual infinity that co-defines its inherent qualities, which as such provides open doors for a penetration into cosmic vastness and infinitely large through one's attentive absorption and wondering magnification of infinitely small. As a consequence of the contextual, holistic nature of physical and experiential order, each particular observational and explanatory perspective covers special and unrepeatable experiential fields, so that every individual being of the world provides a unique cognitive source that 'brings forth' natural/experiential phenomena, and in complementariness with all the other worldviews builds an essential panorama of epistemological relationships between beings and the ultimate mystery of existence in form of the 'hidden' ontological reality.

Intersection of the contexts of subjective, perceptually constructing and realistic, structurally perturbing and perceptually initiating aspects of the co-creation of experiential phenomena presents another formulation of the genuine co-creational interplay between 'beauty in the eye of beholder' and 'hidden' providential foundations of divine Nature that underlies the emergence of all the details of one's experiential reality. However, acknowledgement of a 'sea-deep' and inexplicable character of the contextual spheres of both the epistemological (in terms of the imperceptibility of fundamental patterns of beings' intentions, aspirations and values) and ontological (in terms of the incomprehensibility of the theological concept of 'God' and the fundamental Heisenberg's uncertainty of 'as-it-is' ontological order behind the 'veil' of one's experience) co-creational sides, implies that the acceptance of versatile explanatory perspectives

presents the path to enrichment of one's knowledge of the immensely intricate and deep co-creational organization of experience.

Just as a forest map could not be drawn through leaning onto a single tree in as versatile form as can be achieved by walking around and shifting observational perspectives, concise and detailed representations of experiential events require incessant comparisons of mapping results derived from a multitude of observational perspectives. Many exotic archeological sites have been discovered from the plane, despite the fact that the explorers were previously scouring the same areas from land without noticing any extraordinary patterns. Simple stepping aside and switching perspectives can, therefore, lead to discoveries of significant and wonderful patterns, as the case of the famous photograph of the planet Earth may indicate. In that sense, learning about the contexts in which one's ordinary actions and creative engagements take place may provide pathways to improvements in creativity and successfulness of the activities directed to small and specialized tasks, so that generalization and specialization may be consequently considered as supporting and accentuating each other in one's advancements in either specialized 'diving for pearls' or systemic 'swimming in the sea' of general patterns of human knowledge. The personal meaning and awareness of creative potentials of implementation of scientific methodologies, for example, become reinforced and proliferated through one's investigations thereof from the perspectives of artistic creation, technological design, and sociological, philosophical and ethical studies of scientific practice. If effective implementation of scientific discoveries and steering of the scientific progress in globally harmonious directions is desired, discoveries of the essential features of artistic creativity, and acknowledgement of an all-encompassing, existential significance of invoking profound enjoyment and metaphorical inspiration in cognitive encounters with pieces of art may be required, whereas if comprehension of emotions and aspirations that pervade the bases of artistic pieces of the current era is desired, it becomes essential to understand the feedback loops that arise in the interactions between cognitive patterns of humanity and the technological products of their environment. Expansion of the context in which one observes one's daily duties, therefore, presents the key to awakening senses of heavenly satisfaction and reaching the ideals of the wise management of these small 'labors of love'. Keeping an eye on an all-embracing Gestalt of natural order may naturally predispose one to the diligent and humble management of daily routines and yet their pervasion with a quiescent sense of wonder and the feelings of true satisfaction, as the well-known Zen horse keeper⁷⁰, serene and tranquil throughout both jubilant and arduous times, may have illustrated.

The co-creational nature of experience implies that synthetic comparisons of diverse observational perspectives mark both acknowledgements of novel qualitative features of an investigated system and insights into previously obscured epistemological patterns of subjective interpretational settings, as well as the consequential enrichment of interactional options in the relationship between the corresponding co-creational poles. Each novel discovery that applies to representations of natural order may be, therefore, followed by inquiries about how these discoveries metaphorically relate to discoveries at the level of the subject's cognitive improvements, whereby each novel discovery in the domain of one's abstract comprehension of experiential reality may be followed by inquiries about how these conceptual discoveries may be applied in the aspect of informational enrichment of the natural environment. Contextually co-defining character of experiential qualities from interdependent realistic and subjective sides implies that their mutual evolution is dependent on the subtlest and imperceptible patterns of both the epistemological foundations of one's observational attitudes (in terms of implicit

presuppositions, values and intentions) and the realistic place of the co-created entities in the holistic network of natural events. In that sense, Heinz von Foerster observed that ‘we become aware that every action – even mild raising of one’s shoulders – can create a new universe that did not exist before’⁷¹, whereas Bela Hamvas, similarly pointing to the idea that a carefulness with respect to subtlest intentions, thoughts and actions presents the keystone of modern wisdom, claimed that ‘there is no movement or a thought so insignificant as to be not sensed even in the most distant parts of the universe. Every act has its universal meaning for the world. A single pebble thrown into the sea determines a perfectly new direction for the living world, and with every breath something is changed in life of the world, regardless of its smallness’⁶⁶.

Physical behavior of any natural system is guided by the interplay between inherent, subsystemic and contextual, suprasystemic levels of its organization. As has been observed previously, the line of movement of a water molecule engulfed within a river stream is co-defined by both its inherent quantum physical structure and properties and by the surrounding fluid dynamics, actual intermolecular forces, geological properties of the riverbed and the ecosystemic and biospheric hydrological flows and cycles. Freezing solidification of a water droplet would result in an icy crystal with its shape and morphology defined by an interplay between the intrinsic physical tendencies to impose specific crystal structures and fine ‘waves’ in environmental physicochemical conditions that surround and co-guide the process of crystallization. The patterns of movement of macromolecular cellular components immersed in an intracellular autopoietic network of relations may similarly seem random and uncoordinated unless one ‘ascends’ to more complex perspectives that would enwrap the complexity levels of evolving cellular, organismic, ecosystemic and biospheric wholes in a single observational and interpretational context. Each announced randomness, accidentalness or meaninglessness may, therefore, present merely a consequence of an observer’s inability to grasp the whole divine context of being that enfolds and co-guides the movements and evolution of the subtlest natural/experiential details.

Definition and interpretation of experiential harmonies of primary qualities in terms of particular systemic wholes is dependent on perspectives of their perceptual co-creations and reflective observations, irrespective of whether subatomic particles, cells, ‘individual’ organisms or celestial configurations are in question. Drawing boundaries that separate/connect systemic ‘insides’ and ‘outsides’ presents a co-creational act, and as such is partly subjective, autonomous and arbitrary, and partly prone to subtle natural ‘guidance’ and realistic ‘hints’ on how each particular process of distinction should be performed. Experiential systems that from ‘blow up’ perspectives appear as a dynamic and obscure disarray of intricate interactional patterns may frequently be from ‘aerial’ perspectives discerned in terms of a multitude of interactions pervaded with certain periodicities which might be potentially depicted as physical laws that would enable the prediction of their evolution and controllable and practical interference and pragmatic utilization, and *vice versa*.

Interpretational contexts in which a being encompasses experiential features with ‘envelopes’ of meaning and purpose are being continually co-created through an interaction between a subjective ‘sphere’ of questioning relationships directed towards an observed system and a realistic ‘sphere’ of ontological relationships that connect the observed system with the rest of the world. Each co-created experiential detail could be, therefore, considered as a ‘way’ that relates the observer with an infinity of natural relationships, and thereupon provides incessant encounters with the whole wide world through humble and devoted observation of infinitely small experiential details. In the opposite direction, all subtle thoughts and intentions may be

similarly related to the entire existence, and depicted thereupon as ‘messenger doves’ that incessantly emit mild, inspiring and harmonious or disruptive, turbulent and disharmonious ‘waves’ to even the most desolate corners of the world. Or as Swami Sivananda had used to admonish, ‘Your mind is like a wireless machine. A saint with peace, poise, harmony and spiritual waves sends out into the world thoughts of harmony and peace’⁷².

Because the meanings attributed to experiential patterns depend on both realistic and interpretational contexts intersected along the line of an endless co-creational interplay between mind and Nature, each experiential quality may be regarded as a ‘sign of the times’ that reflects both the ontological order of the complete Universe and the whole subject’s history of being and knowing, including ethico-aesthetical, aspirational, social and biological aspects of his actual epistemological settings. Ontological and epistemological foundations of being and Nature are, therefore, reflected in each experiential quality, so that meanings can be in general defined as experiences of the context, as Fritjof Capra had suggested⁷³.

In accordance with the conceptual framework of quantum field theory wherein physical entities are represented as patterns of relations that they ‘spread’ towards their existential contexts, all experiential observations result in a coalescence of ‘content’ and ‘context’ into single interdependent unities of relations. An essential philosophical offspring of such a conceptual outlook has been related to the idea that physical entities could not be investigated or described apart from the rest of their contextual, both epistemological and ontological existence. Just as seriously deteriorated meanings and communicational misunderstandings might result from comprehension of human expressions - such as individual ideas as acontextually extracted from e.g. syntactic textual wholes that they belong to, euphonic expressional aspects, cognitive and biophysical structures of beings involved in the communication of meaning, actual social circumstances in which they are expressed or other existential contextual aspects defined by values, customs and reigning problems and challenges of individual beings and the current era – in limited interpretational contexts, in order to satisfy the ideals of exhaustive observations and analyses in reference to contemporary methodological tools and scopes, all natural/experiential qualities need to be meticulously (with keeping an eye on an infinite physical and metaphysical contextual whole) extracted from the infinite existential contexts in the course of their observation and interpretation, so that the extent of the lost ranges of their ‘spread’ inherent qualities in the resulting scientific or common descriptions thereof might be minimized and yet referred to in terms of intentionally omitted relationships as the consequence of employing a set of pragmatic approximations.

Illustrations of communicational misunderstandings and misconceptions in understanding caused by contemporary tendencies to neglect references to wide contexts of relevance in the processes of construction of definitions and descriptions of experiential qualities may indeed be numerous. An obvious set of striking examples may be related to routine journalistic representations of social events, pervaded by surprising insensitivity to contexts under which the announced expressions have been presented, and the corresponding negligence of the fact that identical ideas and assertions presented under different contexts may invoke their interpretation in terms of thoroughly different (and in specific cases induce completely opposite interpretations in comparison with the intended ones by subtle modifications of the contextual character) meanings and directives. On the other hand, the knowledge of the contextual co-creation of systemic qualities (in addition to the acknowledgement of complementarity of perspectives, pervaded by the mutual accentuation of diversities and unities, as the basis for the dialectical evolution of knowledge and life, rather than the propagation of overemphasis on either sole

differences, individualities and originalities or self-irresponsible submissiveness to standardized and traditional conceptual and behavioral guidelines) implies that what may present viable and beneficent experiential patterns in one cognitive context (as a higher-order set of relationships formed by an intersection of subjective and realistic context of a particular perceptual or experimental observation) and for one particular being, may be confirmed as inconvenient and inappropriate in other cognitive contexts and for other beings, which provides implicit incentives for a fosterage of communicational attitudes based not on a forceful propagation of knowledge with disregard of the contextual importance of both its presentational and interpretational aspects, but on vigilance, tolerance (that establishes unique and unrepeatable approaches to presentations of ideas), and intuition as the key properties of truly wise and benevolent communicational and educational epistemological settings. The co-creative and co-evolutionary character of social communications, ecosystemic interactions, metaphysical and theological aspects of the co-creational experiential formation and all creative endeavors in general implies that the metaphor of mutual 'brick-by-brick' edification of common towers of knowledge and understanding may be applied as an adequate description of the pragmatic co-orientational character of social communications of meaning. On the other hand, such a metaphor implies that an attitude of rigid steering of one's actions in accordance with preconceived rules of conduct should cede its place to the one permeated with an absorption of surrounding worldviews and directives and always anew setting oneself for a quest for the perfect corresponding 'bricks' of ideas that will unitedly reinforce the actual towers of ideas and yet open the fields for further inquiries and fruitful novel observations, reflections and diversification of opinions.

Aristotelian ideals of the establishment of objective, observer-independent criteria of 'truthfulness' and of the methodological tools for evaluation of all possible linguistic assertions in reference thereto imply an implicit dissolution of the contextual effects in the domains of formulation and linguistic expression of ideas, despite the fact that common sense can provide an insight into the idea that interpretational contexts - partly composed of epistemological foundations of a subject being, including his ethico-aesthetical values and aspirations, and partly comprising realistic sets of relationships that engage the co-creatively encountering sides in interaction with the rest of the world, although inextricably intertwined in the resulting, higher-order contextual form - partly outline the inherent qualities of observed systems. Partial elimination of the contextual significance in evaluation of 'inherent' qualities of experiential patterns presents a necessary precondition for an application of 'truthful' compositional and interpretational rules and an objectivistic acknowledgement of language as an indicative system of experiential mapping with the purpose of not provision of pragmatic, partly subjective and therefore untruthful directives in mutual coordination of experiences, but of 'truthful' representation of the world 'as-it-is', independently of the subjective aspects of the experiential co-creation. This work has been correspondingly pervaded by many similar or even identical ideas, which when expressed in different contextual surroundings, might be similarly interpreted as pointing to quite distinct meanings.

The observation that contexts under which experiential patterns interactively 'shine' with relations with the rest of the world co-define and reflect both superficial and essential qualities of the given patterns implies that 'identical' cultivated ideals could be in one set of cognitive/environmental contexts shown as salutary and harmonious and in another set of cognitive/environmental contexts as unproductive and unbalancing. For, the qualitative infinity and intrinsic uniqueness of any particular natural system and any beat of the cosmic music of life are present not merely in their structurally inherent patterns, but evenly in the contextual

character thereof. Because contexts that correspond to ‘idealistic’ and ‘realistic’ co-creational poles become enriched in parallel in the course of a spiritual/informational evolution, devotion to ethico-aesthetical improvements of the context in which one’s experiential world has been co-created and interpreted - including the fosterage of inner incentives to incessantly seek for novel ways of seeing experiential/natural details and expressing the essential threads of one’s ideals and aspirations, and a partly non-judging, all-embracing and all-forgiving cognitive attitude which arises as the consequence of human inability to probe the endless boundaries of both epistemological, ‘well of the soul’ contextual aspect of the experiential co-creation and ontological, ‘starry well of the Cosmos’ contextual aspect of the experiential co-creation – provides the pathways for practical and pragmatic edification of informational landscapes of cognitive environments (as realistic relational contexts), and *vice versa*. Interrelation of the conception of dialectical evolution of biological, cognitive and ethico-aesthetical aspects of being and an acknowledgement of the contextual nature of experiential/natural qualities, ideals that ‘everything follows the Way of Nature’ may be naturally inferred, as whatever the character of acts and deeds of the beings of the world may be, in context of the whole they are to produce either ‘correct’ and inspiring or ‘erroneous’ and instructive directives for an endless evolution of cognition and life towards ever more wonderful ‘bright skies’ of purified and sublime interpretational contexts, ‘waves’ of prosperity and the ‘sun-rising’ horizons of knowledge.

By knowing that an endlessly evolving contextual sphere of existence embraces all the creatures and events of the world under its ‘skies’ and endows them with qualities of the whole, one’s sad contemplations over the set of overwhelming questions about the passing moments of life and a seeming effective meaningless of careful, devoted and diligent creative acts, might be transformed into divine observations and co-creations of experiential details, under the Sun of the context of an all-pervading knowledge that indeed everything follows the ‘Way of God’. In that sense, the contextual nature of co-definition of systemic qualities may provide one with the idea that, similarly to a jazz improvisation wherein all misleadingly played notes may be through an immaculate ending enwrapped in a context that will provide them with beautiful and ‘perfectly imperfect’ meanings, desperate and doubtful moments along the path of one’s sacred quest for knowledge and divine meaning of existence may in the end be transformed into wonderful sources of joy and happiness, permeated by the final angelic voices and acts that will contextualize the overall preceding history of being in a beautiful and sacred light.

Contextual nature of experiential qualities as related to systemic knowledge

‘Through faith we understand that the worlds were framed by the word of God, so that things which are seen were not made of things which do appear’

Hebrews 11:3

Majestic evolutionary dawn of human reflective abilities and the subsequent procession of philosophical and scientific traditions of reasoning can be regarded as interspersed with sparkling inspirational moments that may be classified as instances of systemic, metaphoric, analogous and ‘common sense’ reasoning. Some of the most valuable ideas, ethical norms and parables of the tradition of human reasoning are typified by their systemic nature, which predisposes them to application in an endless variety of interactional contexts. It may be recalled that whereas the classical approach may be considered as one describing experimental experiences, quantum theory describes conditions of forming experimental (physical)

experiences in terms of their probabilities, and systems theory describes conditions of describing probability models of experiences and ideas, so that both classical and quantum theories could be, thereupon, regarded as sub-branches of the systems approach⁷⁴. The immanent humbleness of systemic knowledge, according to which minute and seemingly insignificant details of experiential worlds are pervaded with enormously important patterns and relationships that can be applied in a wide variety of contexts, may be also reflected in form of the contemporary norm of eco-friendliness: ‘Small is beautiful’⁷⁵. Careful and humble observations of ‘small and beautiful’ natural events and relationships have since the dawn of human consciousness been the source of metaphorical inspirations and provisions of enlightening sparkles of thought that initiated findings of numerous problem-solving approaches. ‘If a man thinks about the connections among his natural living, if he is careful about the feelings that overwhelm him during observations of natural objects and representations, when he walks through the woods, fields and valleys, when he climbs the hills, he finds many threads that link his heart to sensibility and thinking in accordance with nature. And the more he knows about these links, the more he penetrates into knowing oneself. Therefore, in order to know, we need to unravel all the aspects of our spiritual living. If we want to get to the whole, we ought to start from the parts’⁷⁶, Jožef Stefan accordingly wrote in his glorification of a calm pastoral environment as the inspirational foundations for a fruitful scientific work.

Systemic knowledge may be considered as a natural complement and a pragmatic, creativity-boosting ‘companion’ of any form of specialized methodology. However, it could not be identified with either scattered and encyclopedic proficiency in recognizing classifications of natural/experiential entities or pure generalizing character of reasoning, but may rather be described as the Confucian thread, tiny and small one, but immensely useful due to its ability to connect to and interrelate with all the other threads, and eventually assemble them into scientifically consistent, ethico-aesthetically beautiful, cordial and inspiring, and yet practically potent and powerful ‘cordages’. Due to extremely broad adaptive capabilities, widely acknowledged as unprecedented in the living world, human beings may be considered as biologically empowered with cognitive capacities for an ‘exercise’ of generalizing and systemic knowledge, instead of being constrained in the limiting conditions that impose the needs for excessive specialization and mechanically performing tasks that frequently tend to suffocate natural inquiring attitudes, inherently related to agile switching among various perspectives and synthetic edification of higher-order impressions derived from observations and comparisons of the same ideas and deeds in various interpretational contexts. The contemporary effects of the unaware distancing of goals that human users attain by means of technological products from the actual accomplishment pathways and, consequently, from the wide range of effects produced by the utilization of technological devices and products of human work in general, may be regarded as partly caused by the present-day overemphasis on the values of productive specialization on the account of neglected stimulations of the importance of placing human actions in broad contextual networks of social and ecosystemic interactions, so that the latter effect of overspecialization may be considered as the fundamental cognitive base of the dwarfed ecological consciousness of the modern era. Sympathy and compassion with various interpretational perspectives, worldviews and ‘eyes that see the world’, therefore, present the way to ‘rejoice with them that do rejoice, and weep with them that weep’ (Romans 12:15), and enlarge the domain of one’s understanding of the overall context of existence, and *vice versa*: with learning about the overall context of one’s existence, one gathers more vigor to invest sincere sympathy and compassion in encounters with other cognitive perspectives of the world.

Simply saying, if one wants to become successful in ‘big’, one has to learn to be small, and *vice versa*: if one yearns to become diligent and effective in ‘small’, one has to keep one’s eyes on big, outspread the contexts of one’s existence and plunge one’s mind into its starry vastness. For, ‘he that is faithful in that which is least is faithful also in much: and he that is unjust in the least is unjust also in much’ (Luke 16:10). Dedication to educating both oneself and the others, thereupon, presents the grandest of all conceivable human desires and professions, particularly when genuinely aimed towards edifying the invisible foundations of knowledge, ethics and creativity of experiential worlds of the fellow beings.

And in our gentle walks along the endless coastlines that connect/separate crystallized patterns of human knowledge and the unsettled sea of unknown, it is worth recalling that instead of ‘photographing’ and superficially notifying one’s presence at given times and places, a humble and self-immersed absorption of gracious landscapes and an active mindful exploration for reflective transformations of their metaphorical meanings into conscious contexts that will subsequently illuminate some dark and obscure experiential details and provide wonderful solutions thereto, may be depicted as an attitude of a genuine wisdom. Instead of covetously collecting and endlessly classifying and sorting pebbles and seashells found along this inspiring coastline of knowledge^{77,78}, by using the cognitive power of imaginative knitting of Confucian threads of systemic knowledge one may continue to gracefully link, unite and synthesize fine lines, contours and hums of the details of one’s experiential world into diversified systemic wholes, patiently learning from small waves and ridges that may provide inexhaustible sources for one’s cognitive journeys into the secrets of the co-creational encounters between ‘celestial’ and ‘spiritual’ contexts of realistic and subjective existence of experiential qualities, respectively. Similar to the case of a Zen story in which a foolish character sits thirsty next to the riverbank, constrained by the fact that he cannot drink the whole river⁷⁹, the extreme cognitive attitudes that may correspond to one’s complete cognitive insatiability or total disinterestedness and indifference both present imbalanced states in comparison with the perfectly fruitful balance of cognitive wandering and leaping for the novel fruits of knowledge on one side, and cultivating, maintaining and revisionary re-creating firm aspirational foundations of one’s knowledge on the other. Achieving to nurture some scary ‘rabbits’ of one’s world with the water of life from the being’s palms may present a greater achievement than a grandiose selfish drinking from the inspirational fountains of human knowledge, whereas one of the rare sights more wonderful than sole wondering over the glimmering patterns of the starry sky may belong to one’s careful watching and wondering over the starry eyes of the other as wondering in front of the mysterious heavenly patterns of the starry sky. Cultivation of the corresponding balance between the divine and benevolent education and an introspective, self-responsible inwardness may gradually transform one into a Sun-like being that meditatively burns inner aspirational essences and empathically ‘shines’ with never-ending relations of goodness spread towards the world.

The knowledge of qualitative infinity of experiential/natural entities as arising from the contextual nature of their inherent qualities may spur the development of one’s cognitive attitudes towards a devoted and detailed investigation of small and minor details of one’s experience, and thus surpass the tendencies towards exhibiting superficial attention, ignorant to fine and minute experiential details and oriented towards attaining final classifications of natural details into all-encompassing categorized schemes of knowledge. The religious practice of opening sacred scriptures at ‘random’ places, beginning the reading from that point on and heedfully reverberating and absorbing individual sentences should be, therefore, considered not as a superstitious practice that extinguishes one’s sense of self-responsibility, but as an

emanation of the knowledge that wisdom lies not in a lustful accumulation and storing of treasures, but in a devotion of one's whole being to experiential details, individual expressions or beings faced, and knowing that through the mastery of systemic, analogous reasoning, related to invoking semantic experiences in a variety of interpretational contexts, co-defined by one's limitless 'idealistic' co-creational aspect, each thought could be transformed into an infinite array of meanings, which would, on the other hand, in different 'realistic' contexts possess also an infinite number of potential utilizations. Similar to the cases of Zen stories in which two other foolish characters appear⁷⁹, one who digs out someone else's 'golden eyes' with an anticipation that they will provide him with the powers of observing 'golden chiaroscuro' in experiential features, and the other who concludes that deliciousness of the salt must be the reason for the transition from a savorless to a tasty meal by adding some salt to it, the fallacious ideas of values of natural objects thoroughly resting in themselves instead of on the relations between the realistic patterns of the objects' relations with the environment and the subjective patterns of attention of 'the eye of the beholder' (altogether with the corresponding negligence of holistic, synergetic features of the natural/experiential order), present the cognitive traits of similarly 'foolish' and narrow-headed contemporary experiences of experiences.

An apparent ease with which youthful and cognitively 'fresh' creatures absorb and construct new patterns of knowledge is the direct consequence of their capabilities to flexibly 'instill life' into interpretational contexts that are the key to successful learning. Second-order learning (i.e., meta-learning or learning of learning) related to learning to 'manipulate' the contexts of one's learning presents, therefore, a learning task for the practical epistemology of the future. Educational advancements may be in the latter sense defined as the levels of expansion of subjective cognitive contexts that co-define minute characteristics of experiential details, aiming to reach and reflect the whole Nature in one's context of perceptual and interpretational co-creation of experiential qualities, and eventually recognize both epistemological essences of one's being and ontological essences of the entire existence reflected in every particular detail of the world of one's experience in the course of an endless co-creational interplay between spiritual foundations of the being and divine ontological foundations of Nature. Whereas wondering amazement of childish encounters with the patterns of experiential world is partly the result of their wavy and flexibly changeable interpretational contexts⁸⁰, indicating the importance of contexts in social and educational communications and yet paying attention to the context in which one points to the co-creational patterns of experience in social and educational communications provides the secret to provision of divine and truly helpful directives in our worldly communications. As has been observed previously, informational patterns of 'realistic' side of the co-creation of individual cognitive landscapes are, therefore, modified and enriched in parallel with the 'idealistic', inner contexts of perception and interpretation of experiential patterns on the other co-creational side, so that informational and spiritual evolutions blossom forth through their mutual accentuation and support.

Genuine learning that broadens the context of one's experience of experiential features and knits the wondering 'carpet' of contextual cognitive 'celestial' sphere that enwraps with a sense of amazement and mystery the details of one's experiential world, proceeds in parallel with an enlightening edification of the sacred epistemological foundations of one's being. The parallel development of ethico-aesthetical foundations of one's epistemology and interpretational contexts of one's experience may be reflected in the observation of interdependent proceeding of the widening of the interpretational context of one's experience and the senses of responsibility for one's actions and choices in relation towards ever larger existential wholes (instead of the

submissiveness to minor authorities of one's experiential world as produced in narrow conceptual contexts in which one places one's acts and visions of well-being and short-term beneficence). The co-creational character of the rise of experiences implies that all experiential details are partly created by the subject being and may be consequently represented as extensions of his own being, so that broader contextual spheres of one's reasoning may be considered as identical to broader limits of one's being. Instead of being based on conditional training practices related to an instigation of repetitive performances in accordance with pre-given rules of reasoning and acting, a creativity-fostering education may perhaps be more related to directing attention to the contexts in which particular objects of discussion are faced, as much as to presentations of topical essences of the lecturing contents in contexts that may provide natural incentives for an autonomous acceptance and re-creation of presented ideas, and instead of providing immediate conclusions to one's adventurous inquiries, to provide only precious 'final visions' that may stimulate an autonomous development of novel and further contextually stretching questioning attitudes. In that sense, teachers' readiness to wonder along with the beings being 'taught', and to proudly occasionally say: 'I don't know', knowing that 'only the one who knows that one does not know may truly know', may point the beings to invaluable cognitive balances between the cultivation of firm and yet flexible 'Biblical' foundations of faith and knowledge, and the adventurous and uncertain inquiries about the knowledge horizons which conceal novel coasts thereof and eventually provide drives and routes for discoveries that perpetually head forward and yet return the inquiring mind to the starting place of its adventure, in accordance with the worldviews depicted by means of autopoietic, self-organizational and ecological conceptual frameworks. The unrepeatable and inevitably limited character of interpretational contexts also implies that entirely preconceived management plans may not provide perfectly harmonious interactional options, and that improvisational and intuitive interactive aspects need to be acknowledged as complementary to schematizing reflective activities in the domain of human creativity. Christian qualities of faith, hope and love may, therefore, partially occupy the place of the attitudes permeated with absolutistic connotations and perfectionist certainties, and enlighten the way for evolutionary steps of humanity based on the corresponding balance through which one holds and directs the 'rays' of knowledge as they rise from the foundations of deep ethico-aesthetical aspirations, faith and love. In the course of such co-evolution of novel cognitive and informational landscapes, one may know that the co-creational origins of all details of one's experiential reality imply that each scientific investigation of experiential features simultaneously leads to the epistemological heart of the explorer (from which the fundamental epistemological questions with which one approaches investigation of experiential phenomena arise) and to the ontological foundations of Nature. On one hand, contemporary scientific quests for extraterrestrial intelligence may accordingly be considered as partial reflections of innate human aspirations to meet God as theological metaphor of the other side of the co-creation of one's experiential features⁸¹, whereas nanotechnological and genetic engineering explorations may lead scientific minds to realize that human creatures have from the very beginnings of science been the ultimate nanotechnological and genetically 'engineered' 'devices' at the current stage in the planetary evolution of life⁸². On the other hand, in reference to contemporary scientific representations of evolutionary pathways, according to which despite an apparent negation of the teleological aspects thereof, the regularly applied notion of transcriptional and replicational 'mistakes' in genetic expression implies preconceived and implicitly postulated purposes of the described process⁸³, the purpose of all human acts and events of creation and development, including the natural evolution, need to be

‘crushed’ by the waves of faith and hope, which would provide human knowledge with efficient and blossoming drives.

In relation to the second-order character of genuine learning as corresponding to flexible transfigurations of one’s observational and reflective contexts, ontological foundations of Nature in the course of a co-creational guidance of evolving human epistemological and spiritual essences rarely provide perfect ‘yes’ or ‘no’ replies to one’s interpretational contexts of the experiential co-creation (as reflecting one’s deepest values and aspirations), but in a ‘fuzzy’ logical manner point to partial inadequacies of the given contexts of interpretation and understanding of experiential phenomena, and invite the beings to autonomously modify them until becoming ever wider and ever more perfectly reflective of the wholeness of Nature in the being’s interpretational contexts and the corresponding interactions with the environment. Favorable settings for the steps of scientific progress are accordingly preconditioned by the feedback receptions of not perfectly negating or affirming responses from natural patterns to fundamental epistemological questions with which researchers approach natural phenomena in the course of scientific investigations, but by an experimental recognition of ‘fuzzy’ logical responses, depicted as ‘Mu’ answers of Zen masters. Starting from these points permeated by mixed clarity and obscurity, information and noise, knowledge and horizons, one can open the door for the subsequent enrichment of conceptual contexts in which the same and novel questions and observations of experiential patterns arising out of mind/Nature co-creational interplay may receive a more profound character and consequently lead to ever more sensitive and finely arranged representations of human experiences and the corresponding ‘inventive discoveries’ of informational and spiritual treasures of potential and actual biospheric communications.

Numerous classical paradigmatic ideas that pervade contemporary approaches to understanding natural/experiential phenomena may be challenged on the grounds of an implicit acknowledgement of the contextual character of natural/experiential systems. For example, molecular machining ideals which claim that the future fabrication of functional nanoscopic material structures will be based on atom-by-atom manipulations, are being intensively challenged by observations according to which in order to produce a desired interaction between two physical entities, irrespective of their size and complexity, not only their internal structures, but the overall surrounding context of their physical encounter needs to be precisely set as well. In that sense, Richard Smalley used to say, ‘Much like you can’t make a boy and a girl fall in love with each other simply by pushing them together, you cannot make precise chemistry occur as desired between two molecular objects with simple mechanical motion along a few degrees of freedom in the assembler-fixed frame of reference. Chemistry, like love, is more subtle than that. You need to guide the reactants down a particular reaction coordinate, and this coordinate treads through a many-dimensional hyperspace’⁸⁴. Despite the fact that the basic truism of the paradigm of molecular biology is that ‘structure defines function’, it is nowadays being similarly acknowledged that sole identifications of static structures of biomolecules, regardless of the actual biochemical and autopoietic contexts of their interaction, is insufficient to provide conditions for precise definitions of their functions^{85,86}. Cholesterol molecules that can, depending on the interactional *in vivo* context, play the roles of lipid biomembrane fluidity and transport balance regulators, second messengers in signal transduction mechanisms and/or precursors for the synthesis of bile acids, vitamin D₃ and steroid hormones, may provide an example of a diverse multitasking nature of structurally identical biomolecular entities under different biochemical contexts⁸⁷. Cholesterol is soluble in alcohols and insoluble in water, and

from a linear point of view one might become tempted to think that consuming alcohol may help in dissolving atherosclerotic deposits in the blood. However, by disrupting the metabolic harmony of cells and tissues at many different levels, the eventual effect of consumption of alcohol turns out to be quite opposite: higher levels of triglycerides and cholesterol in the blood, which clearly indicates that the effects of chemical substances on the body need to be evaluated from holistic perspectives, taking into account the most distant side effects, which frequently become reinforced through multiple feedback loops all until an opposite effect from the one expected from a narrow perspective is brought about. The popularly mistaken dichotomy of 'good' and 'bad' cholesterol, furthermore, refers to an identical chemical structure of cholesterol molecules, although bound to different cholesterol-transferring lipoprotein complexes in the bloodstream. The contextual definition of systemic qualities implies that experiential patterns observed from narrow conceptual perspectives as ineffectual and useless, may be naturally endowed with a genuine design and unique purpose when viewed from wider perspectives, which may be illustrated by the example of cellulose, indigestible and ostensibly worthless ingredient in the ordinary human diet, although evidenced as an essential 'nutrient' as soon as one broadens the actual interpretational context in order to incorporate the general pattern of metabolic relationships of human organism as a whole. Furthermore, it has been evidenced that certain dietary fibers, such as guar gum, lower high cholesterol levels in blood more drastically when they are introduced as a part of the cholesterol-rich diet comparing to the cholesterol-free conditions⁸⁸, thus indicating that a harmonious synergetic combination of all the essential ingredients of the human diet provides the most beneficial conditions for one's healthy development. Hence, there are no intrinsically healthy or unhealthy patterns in life, but it is their place in relation to the corresponding existential and experiential contexts that endows them with specific qualities.

A similar holistic 'ascension' in understanding towards an augmented valuing of seemingly minor and negligible natural/experiential details may be elicited by recognizing the line of progress in the development of industrial orange juices. It went from the production of pure aroma extracts through successive additions of ascorbic acid, various other vitamins and dietary minerals (after hypotheses on synergetic effects in the absorption of multiple vitamins and minerals were confirmed; consequently, most pharmacists nowadays agree that what is being delivered to the body as a drug is as important as how it is being delivered, that is, by means of what carriers, using what sort of additional compounds, etc.), cellulose and other biomolecular fibers to eventual returns to the beginnings of this industrial processing journey, marked with the acknowledgement of the highest nutritional value of fresh fruits. This conclusion was derived from the recognition of unfavorable processing effects of oxidation of ingredients during squeezing and aging (namely, even freshly squeezed juice contains about four times less vitamin C compared to the whole fruit), of the remedial nature of the diversely composed and non-concentrated chemical content of fruits, and of the essential nutritional role of trace compounds and elements that altogether constitute the 'realistic' contextual aspect of the human diet (the pith, that is, the spongy white part underneath the skin in oranges, limes and lemons, in fact, contains ~ 80% of the entire content of vitamin C in each one of these fruits). The latter, however, becomes interactively faced with the 'idealistic' settings of the subject being's attitude towards food in the course of self-nourishment and the co-creational endowment of the nutrients with healthful and being/environment edifying character. The holistic character of natural systems implies that inherent qualitative essences and potential functionalities thereof are co-defined by their overall existential contexts, so that even a perfectly static natural structure would

always present an endlessly changing system of dynamic relations, formed under a contextual ‘sky’ of the intersected ‘idealistic’ and ‘realistic’ contextual horizons of their primary perceptual co-creations, secondary perceptual categorizations and reflective interpretations.

Where foundations become contexts

‘With the drawing of this Love and the voice of this Calling
We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.
Through the unknown, unremembered gate
When the last of earth left to discover
Is that which was the beginning;
At the source of the longest river
The voice of the hidden waterfall
And the children in the apple-tree
Not known, because not looked for
But heard, half-heard, in the stillness
Between two waves of the sea’

T. S. Eliot, *Little Gidding*, *Four Quarters*

Just as physical entities represented in the conceptual framework of quantum field theory exist as patterns of relations by which they interact with the corresponding contextual environments, and just as the charming essence of music lies not merely in musical instruments, but in harmonic relations spread between a listener and the instruments, the essential ‘realistic’ features of natural objects and biological creatures rest not in themselves only, but in the patterns and ‘touches’ that arise in their aspirational ‘spreading’ towards the world with each moment of their incessantly creative existence. Knowing that on the other, ‘idealistic’ side, the beauty of perceived experiential details and creatures of the world exists not in their contents and forms, but in contextual pathways of their partly subjective and partly realistic co-creative perceptual construction and reflective representation, may present a crucial step in the progress towards social environments pervaded with an enlightening carefulness and acknowledgements of the co-creative relevancy of one’s deepest epistemological foundations in the appearance and comprehension of experiential systems. Such a point of view entails that each minor detail of the world, as well as each ostensibly unsuccessful product of one’s work and/or scientific research, may be transformed into a phenomenal source of cognitive prosperity under precisely set contexts of an observer’s cognitive encounters with them. Quiet satisfaction and happiness ‘beneath one’s breath’ felt immediately after enjoying wonderful pieces of art (and merely invoking their marvelous messages and narrative structures over and over again) is partly provided by one’s active cognitive enfoldment of the ‘same’ experiential details in contexts under which both they and the whole world of experience may look fascinating and harmonious. The parable employed in the wonderful story of Charlie Chaplin’s movie ‘City Lights’ may be regarded as a metaphor of such an ‘awakening of new eyes’ in which the same experiential patterns become recognized as lovely and charming, and that through participation in creative social communications pervaded with inspirational commitments and deep aspirations to orient others towards beautiful, ‘sun-rising’ experiential horizons on their co-creational Ways of existence. As the Little Prince’s prudent advice may have reminded us⁸⁹, inner aspirational ‘suns’ of love and care oriented towards single beings of the world may sanctify one’s

foundations of the contextual co-creation and interpretational observation of experiential phenomena, and endow one with enlightened abilities of seeing the whole world as an emanation of divine beauty and love. The contextual definition of experiential qualities may indicate once again that instead of an inspirationally ‘cold’ and detective-like proficiency in purely intellectual spinning of logical threads, the ethico-aesthetical qualities conveyed through the religious traditions worldwide may present truly fruitful roots of all patterns of wise reasoning and the blossoming of all intellectual products of human knowledge and creativity.

Similar to the frames of a painting, interpretational contexts during experiential observations remain implicit. In order to perceive them, it becomes necessary to ascend to higher observational levels that correspond to observations of one’s primary observations. Similar to a celestial sphere that enfolds, embraces and provides contextual ‘limelight’ to the space of earthly interactions and yet provides inspiring wonders that stimulate human majestic aspirations, implicit wishes, inner evolutionary drives and the senses of immense importance of creative decisions at all levels of one’s mindful existence, contexts of one’s comprehensions and observations of experiential phenomena may be acknowledged as engaged in a continual feedback loop with the being’s epistemological foundations. By enlightening the epistemological foundations of experiential co-creation in terms of ingraining sacred values on stones and pillars that comprise the bases of one’s observational perspectives, the contexts in which experiential details are seen become illuminated by a clear and inspiring ‘sunlight’ of reason. One’s implicit patterns of goodness may then start to spontaneously shine and illuminate the world, regardless of superficial and apparent meanings of linguistic expressions that one employs, and despite the fact that being ‘immersed in light’, ‘blind spot’ effects may prevent one from acknowledging the state of ‘enlightenment of reason’ and maintain one on the track of an endless quest of spiritual evolution of life.

After ‘blending’ epistemological foundations and interpretational contexts into a single whole, one may recollect the nonlinear nature of abductive reasoning and interactive circular causalities as pervading the real-life aspects of cognition and biology and implying that, contrary to the hypothetical models of natural interactions dominated by hierarchical and linear causal relationships, a creative steering of the evolutionary ‘wheels’ can be performed from any point of their circular organization. From the perspectives of value-guided patterns of reasoning and ‘free-willing’ drawing of positively or negatively feedback-permeated, respectively dulling or calming, vicious or evolutionary circles⁹⁰, in the co-creational relationship between mind and Nature, one may infer that the cognitive foundations of one’s experiential co-creation subtly guide ramification and blossoming of ‘the tree of knowledge’ of one’s cognitive processes, and *vice versa*: opportunities to enlighten the invisible and directly imperceptible foundations of reflective reasoning and perceptual co-creation with subjective choices, always exist in accordance with Heinz von Foerster’s ideal that ‘at each and every moment, I can decide who I am’⁷¹.

By descending to the secrets engraved at the foundations of one’s being, one may be depicted as simultaneously ascending and soaring as a bird does on airstreams of wonderful imaginativeness that an interplay between subjective observational contexts and the ‘hidden’ worldly beauty in one’s eyes form, and opening aerial and sublime perspectives on one’s experience. The more one explores the foundations of one’s being and knowing, the more one’s heart of devotion becomes heavenly pure and angelically spirited. The fundamental purpose of philosophical approaches is related to examinations of foundations of one’s knowledge, which presents philosophical research as an inevitable aspect in the study of creative and wise

contextual conductance of one's thoughts and actions. Value-illuminating enquiry over one's epistemological foundations may be, therefore, seen as corresponding to brightening of an invisible contextual 'sky' under which one *a priori* interprets and *a posteriori* contemplates on the observed experiential details and acts. Metaphysical domains can be, therefore, simultaneously regarded as 'heavenly breadths' and 'concealed treasury foundations', so that 'the way up and the way down become one and the same', as Heraclitus and Hermes Trismegistus⁹¹, among many other brilliant minds, have observed.

Standing on the 'roof' of one's knowledge and wondering across starry horizons and mystical patterns of human knowledge, therefore, simultaneously presents the way towards strengthening one's inner and 'Biblical' (Matthew 7:24) ethico-aesthetical foundations, which will come to comprise the patterns of goodness, guardianship and love emitted towards creatures of the world. Choices over the context in which one observes experiential details accordingly leave subtle traces and engrave perennial patterns of inherent values upon epistemological foundations of one's knowledge. Cultivation of purified, glistening and inspiring 'waterfalls' of aspirations that subsequently form 'rivers' of one's thoughts and actions, and benevolent dedication of one's whole creative being to others, makes the corresponding cognitive foundations become enlightened and heavenly clean. Once merely a 'heart of darkness', epistemological essences of one's being become transformed into an immaculately glowing aureole of 'the sky of one's spirit', whereby one's knowledge becomes illuminated with periodicity/novelty, predictability/uncertainty and empiricism/faith balanced ideas of improvements in the domain of one's foundations of aspirations and intrinsic values as the bases for adorning experiential features that arise from the incessant co-creative 'touches' with ontological foundations of natural order, and the corresponding beautification of cognitive and existential patterns of one's experiential/natural world, both 'within' and 'without'. All-embracing attitudes that perceive threads of divine beauty as interwoven in all experiential details and interpretational perspectives of the world, and deliberately strew the feelings of empathy, understanding and compassion, make one's entire co-created, both epistemological and ontological aspects of the experiential world follow the way of a balanced evolution of consciousness and life, and become sublimely percolated with the bright rays of hope and graceful tears of sacred devotion. Such a perspective is compatible with Huineng's definition of Zen as 'a research of one's own nature'⁹², Buddha's definition of the sacred Way as the one of purification of the dark spot of ignorance and cognitive inertness at the central 'focus' of one's heart, and the final question of one of Teitaro Suzuki's lectures: 'Zen sometimes seems exceedingly enigmatic, cryptic, full of contradictions, and yet it is a simple discipline and study: 'Do good, stay clear of evil, purify thy heart: that is the Buddha's Way'. Isn't that applicable to all human situations: contemporary and ancient, Western and Eastern?'⁹². One's 'loving' devotion towards beautifying epistemological foundations of oneself and others on one side, and an inquiring amazement invoked by exploratory approaches to understand the meanings underneath the reflections of ontological 'voice' of natural foundations in the emanation of natural/experiential order on different scales and from diverse cognitive perspectives on the other, accordingly provides the way for simultaneous and mutually supporting and accentuating evolutionary preservations of one's environmental patterns on one side and creative self-improvements, brilliant development of individual experiential perspectives and 'Biblical' (Matthew 13:8) fertilization of one's cognitive 'soil', whereupon one's thoroughly receptive attitude permeated with abilities of flexible contextual variations can transform the most diverse natural impulses into wonderful and blessing gifts, on the other side.

In the end, one may recollect once again the essential idea of the co-creational thesis, according to which the qualities of experiential/natural patterns neither do objectivistically rest solely in themselves, independent of either an observer's epistemological settings or the complete ontological, realistic relational environment thereof, nor constructivistically present solipsistic reflections of an observer's deepest epistemological attitudes solely. Experiential/natural qualities instead present co-created patterns that arise at the intersection of a being's epistemological foundations and ontological foundations of Nature, and as such may be represented through the metaphor of 'the Holy Ghost' that emanates in each experiential detail as the product of an endless existential communication between being and environment, mind and Nature, spirit and God, Christian Son and Christian Father. Essential qualities of experiential details, therefore, rest on 'lightly oscillating strings' spread between mind and Nature as the polar aspects of the co-creational experiential existence, and as such may be represented as intersectional pathways arisen at the sacred encounter of epistemological, 'soul-rising' and ontological, 'God-rising' horizons of contextual spheres of subjective and realistic polar aspects of the co-creation of experiential phenomena, respectively. Cognitively standing on a pedestal of the knowledge of the co-creational nature of experiential phenomena, one's graceful, elegant, calm and serene, slightly distant and inwardly oriented, 'cold and white marble statuary' cognitive postures may under warm and joyful, heavenly ornamental and divine 'sunny' contexts spread their 'arms' of cognitive relationships in search of 'the world in a grain of sand, heaven in wild flower, infinity in the palm of your hands and eternity in an hour', and yet know that the essential qualities of living creatures are not non-manifestly immanent in them, but are being constantly spread to the whole world in form of subtle relations that one's aspirational foundations 'shine' with. Even when there would not be us any more, the essential patterns of our beings in terms of our deepest hopes, aspirations, wondering epistemological foundations and wisdom-cherishing attitudes may continue to float and wave throughout the breadths of the world. Gracious aspirations and wonderful imaginative prayers ringing and echoing at the foundations of our hearts, applied to bath and heavenly clean cognitive perspectives of self and others, and nourish and cultivate experiential patterns of the world 'here and now', are incessantly flying from us like the white doves that are bringing messages of subtle and imperceptible 'guiding lights' and 'guardian voices' to the fellow beings, and intersperse the world with 'signs of the times' that will come to provide delicate incentives and metaphorical inspirations to some distant beings of the world. Every moment of 'here and now' may be, therefore, considered as the one reflecting the whole eternity in itself, and *vice versa*: the whole existential eternity reverberates with each small 'here and now' in each of its 'parts'. On the epitaph of a monument of stone to Christopher Wren in St. Paul's cathedral in London, it is correspondingly written: 'Reader, if you seek the memorial, look around you', and face these endlessly interspersed divine 'signs of the times' in each detail of the world of experience.

And finally, when narrow-headed perspectives with boundary conditions that correspond to single droplets of water become broadened until under novel and wide interpretational contexts one starts experiencing existential patterns from the perspective of an Ocean, of never-ending railway tracks that the trains of evolution follow and thereby seed inspirational aspirations for future awakening of ever more wondering co-creational communications between mind and Nature, all of one's sad solitudes over the passing of life, the dialectical evolutionary dances of integrating and developing, and disintegrating and vanishing, ecstatic floating across the seas of knowledge and eventual slumberous floating 'away and beyond', encounters between lustrous cognitive glow and veiling obscurities as inevitable provisions of the steps to the

evolution of knowledge, may be transformed into repentant tears of devotional joy, strength and optimism in one's dedication to enlightenment of others, and let rain down delightful and purified cognitive landscapes, giving rise to heavenly translucent minds and novel cognitive ascensions of the doves from one's heart that will draw enlightening lines of thoughts and emotions on the canvas of mind, and present spontaneous messengers of endearing prayers, aspirations and wondering attentiveness all over the world, providing miraculous signs and subtle directives to blasphemous and perplexed beings of the world in their crucial, crossroad moments in explorations of the meaning of life.

Conclusions

'Notwithstanding in this rejoice not, that the spirits are subject unto you; but rather rejoice, because your names are written in heaven'

Luke 10:20

Approaching the final destinations of this chapter and turning back to where the tender walk of this discourse has started from, one may confirm that there is indeed a necessity for occasional redirection of cognitive views towards contextual 'skies' of both realistic and idealistic ambiances in the course of their co-creational meetings from which all experiential qualities emanate, which may eventually transform one's cognitive attitudes into the ones that correspond to a spiral progression through constant balletic twirls wherein ponderous swirling 'backward' to reach the epistemological foundations of one's reasoning and looking 'upward' towards wonderful cognitive contexts that endow experiential features with the senses of mystical beauty, outlines truly the best foot forward. Continuous interplay between the ontological, heavenly 'sky' of Nature and the epistemological, inward 'sky of the soul' has been shown to co-create the features and evolutionary pathways of all experiential/natural systems. An actively developing relationship between this pair of intertwined 'skies', one corresponding to a being and the other to Nature, endows one's experiential features with lustrous and impalpably glowing outlines. Whilst facing the realistic aspects of experiential horizons may overwhelm the beings with wondering sentiments and ingenuous astonishments, facing the subjective co-creational aspects as the 'inner skies' of reason may correspond to explorations of epistemological foundations of one's experience and their eventual enrichment (which can be, from the co-creational perspective, regarded as subjectivistic self-creative 'invention' as much as a realistic 'discovery' and 'revelation' of something that has always been present there) with the 'sacred treasures of life' in terms of precious human values and divine aspirations. The inner sense of Wonder and Love that one spreads around can be, therefore, regarded as a pair of mutually potentiating aspects of heavenly acting in the world. And in the long and sacred quest for harmonization of inner discords of meaning and eternal beautification of the world, one may realize that this pair of aspects presents two poles of a single whole, wherein their endless interplay makes experiential worlds and divine emanations to arise and evolve.

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