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Transexperiential Inquiry

The scientific method, in a narrow interpretation, yields a kind of knowledge which does not express the full experience which flows from our interaction with, and inquiry into, reality. This appears as a particularly grave drawback for social science which deals with the life of society as if it was observed from some extraterrestrial spaceship lingering above the earth and its scientists trying to observe and correlate what they see humans do and what, to them, seems to be totally without purpose. Where movement toward a purpose, or generally a telos, comes into the focus of inquiry -- whether in the physical or the social sciences -- is the full range of human experience in relating to reality matters. I call inquiry with such a scope transexperiential inquiry. It may be set in the framework of different approaches, or levels of inquiry, which are distinguished by the assumptions they make about the relationship between subject and object, observer and observed :

-- The classical scientific approach assumes separation between the observer and the observed, and focuses on an impersonal "it" which is supposed to be assessed objectively and without involvement by an outside observer; the basic organizing principle here is logic and the results are expressed in quantitative or structural terms.

-- The mythological approach established a feedback link between the observer and the observed, and focuses on the relationship between a personal "I" and a personal "thou"; its basic organizing principle is feeling and the results obtained are in qualitative terms.

-- The evolutionary approach established union between the observer and the observed and focusses on the "we", on the identity of the forces acting in the observer and the observed world; the organizing principle is "tuning-in" by virtue of this identity, and the results are expressed in terms of sharing in an universal process (namely, evolution).

All three approaches are part of our world and are taken to elucidate different aspects of it. They constitute but partial aspects of a multifaceted subject/object relationship as it is evoked most suggestively in a thirteenth century Japanese Zen parable :

Two monks were arguing about a flag. One said : "The flag is moving.
The other said : "The wind is moving."
The sixth patriarch happened to be passing by. He told them : "Not the wind, not the flag; mind is moving."

Wind, flag, mind moves,
The same understanding.
When the mouth opens
All are wrong.

The scientific approach, aiming at a detached view, corresponds to a phenomenological attitude which is not interested in purpose. It has divided the world -- not only into disciplines, but also into a world amenable to objective science and an intractable metaphysical world, as Wigner [1] points out : "The world is very complicated and it is clearly impossible for the human mind to understand it completely. Man has therefore devised an artifice which permits the complicated nature of the world to be blamed on something which is

~~honest art of strong solidity, extremely useful too. What is the~~ nature or the reason of this proverbial certainty?

Theoretical mathematics is a derivative of logic proper, which treats the compositions of sentences with regard to their truth preserving qualities; connecting links are the logic of equality, the logic of attributes leading to the basic theory of sets, and the logic of relations leading to the basic theory of functions. The contemporary concept of mathematics is no longer confined to its ancient topics with their curious diversity: numbers and figures, followed by stars and harmonics. Mathematics is now, rather, an utmost comprehensive and lucidly unifying science. We know of and esteem many mathematical structures which are neither of an arithmetical or geometrical nor of an astronomical or musical nature. A famous example, important for physics and chemistry too, is the concept of an algebraic group, closely related with the exact idea of symmetry. We may try to extend the four traditional fields so as to comprise all of our algebra and topology, or mathematical physics and fine arts, respectively. There remain structures, though, which do not fit properly, an important example being the order relation which gives rise to transfinite induction, analysis of the continuum, lattice theory. Mathmatics is the science of exactly defined forms and structures established by a corporation of unambiguous propositions that do not contain interior nor mutual contradictions. A statement system of that kind is what constitutes mathematical possibility. Mathematically necessary is therefore a connection if and only if its contradictory negation would imply some self-contradiction.

Thus we see that theoretical mathematics is not an axiomatic science, if the concept of axiom is taken traditionally to mean a logical or ontological principle: a statement so evident and so elementary that proving it is neither necessary nor possible. What contemporary mathematicians call an 'axiom' is nothing but a particle of some basic definition, called 'axiom system'; and this is not an assertive affirmation, but an appelative convention. In mathematics proper we are not concerned with the truth of the premise A nor of the conclusion B, but with that of the implication $A \rightarrow B$. We may call $A \rightarrow B$ a 'relative' reformulation of the 'absolute' statment B by explicitly relating it to the 'absolute' hypothesis A; and

The use of the scientific approach, set as an absolute, has had a devastating effect in the area of social dynamics. Either are human systems relegated to the domain of regularities, to behavioral science, or humans are taken to constitute or produce initial conditions, and are not regarded as actors in a process. Contemporary social science is describing a Kafkaesque world in which the institutions and powers of society are anonymous and totally removed from the individual. But the scientific approach also removes "the environment" and its regulation from the world of humans and human activity. It deals with man's world as being "artificial" and distinct from a "natural" world. The scientific approach thus gives rise to a dualistic view, setting man against the world minus man.

The mythological approach, in creating a subjective relationship with the outside world, gains better access to an undivided, holistic reality which includes man. It explores the near-infinite spectrum of flavors the world holds in the psychic realm, the wealth of qualities which arise from our psychic response to the world with which we directly interact. This is the world of the "Here and Now" which is laid out in a finely woven web of qualities. Time acquires a direction here, but we relate to time through a string of momentary situations, through a succession of states of the web of qualities, rather than through a sense of movement. In naming qualities we establish communication with the surrounding world, "get on speaking terms" with it, acquire the possibility of adapting to it and pleading with it -- and, in a minor way, of influencing it in our favor.

The mythological approach corresponds to the existential view of life which concerns itself primarily with the conditions of man's captivity in a world which is "happening" to him. In the classic of modern existentialist philosophy, Sartre's "La Nausée",

the basic existential experience is lived in the encounter with a stone. The experience of the material resistance in the stone generates a feeling of a specific quality, nausea, and thereby a personal relationship with the material world. Medieval alchemy tried to turn this passive relationship into an active one, in which man would be capable of transforming the material world through psychic forms of interaction.

The process of seeing, according to recent research, is at the one hand an optical process yielding an image, but on the other hand an energetic process involving the hypophysis and, through it, the entire person. In the light of these findings, the subject/object relationship becomes an integral feedback process in which both sides touch and shape each other. Goethe's Farbenlehre (theory of colors), put aside by science for a long time because it considers man's interaction with reality as such an integral physical/psychic process, is regaining our respect these days. Recent theories of cognition start from the basic postulate that the senses have a dual nature, a physical and a psychic one. According to Gosztonyi [2] they form a field of tension created in the encounter between material processes and psychic receptivity.

Nobody has described with greater sensitivity and subtler psychology than Jean Giraudoux how the human mind, in tune with a reality full of psychic vibrations and life, is driven to create a mythological world of personal relations. In his novel "Suzanne et le Pacifique" [3], he follows the inner adventures of an eighteen-year old girl who is stranded in isolation on a South Sea island. She is a sort of anti-Robinson-Crusoe. Unlike the latter who, in his scientific approach, carries his rigid European models with him wherever his fate leads him and finds nothing better to do than to build a dull replica of Europe in the lush, tropical life of his

island, Suzanne is totally open and fluid -- she virtually flows into the life of her island with all its fascination and lure, variety and color. She senses how life touches her there with an incredible wealth of facets, and she senses also that these forces try to caress and seduce her because, far from places where humans settle, "in this French girl, they see their only chance to ever become divine." A sigh in the forest begs to be named God of Silence, a rustling in the catleyas precisely at sunrise aspires to become God of the Red Ray or a flickering electric discharge in the sky just above the sunflowers God of the Green Ray, and a big tree, from whose inverted roots Suzanne always receives a rough blow on her shoulder possibly would like to become God of Caresses .... But Suzanne does not yield; she gracefully plays with these forces but she remains suspicious of all this immodest begging and also of the more modest appeals addressed to her by aspiring half-gods. She continues to call the sea sea, and the wind wind and not Aeolus or Orpheus, and in addressing the island and the birds she says "vous" to put a distance between them and herself ....

In our scientific and technological age, we are still largely living in a mythological every-day world whose order is built from subjective qualities and their interactions. The weather can be good or bad or fair, the sky friendly or threatening, a breeze strong or gentle; trees whisper and forests murmur, the sea rages or is calm, space and time are commodities which can be gained, saved, or wasted, and so forth. Our daily life is a series of interactions with objects which seem to treat us with friendliness or malevolence. It resembles the mime sequence in which the great Czech mime Ladislav Fialka encounters the objects of his personal surroundings, acted by two female assistants -- the alarm clock which does not want to stop, the shower which yields only a trickle, the swinging door which kicks him in the back, the car which jumps, whereas at other times

they all seem to outdo each other in impeccable, loving service to their master. On another level, institutions of society such as government or industry appear to some young people as personified evil, while they appear to others as the personification of justice or leadership. Much of our political life is a play between such mythological figures. And out belief in a macro-automatism of ultimate self-regulation has mythological roots, too.

The mythological mode of inquiry is at the origins of both art and religion. In a hostile world, man set out to build an anthropomorphic world, a home, by placing himself in a network of subjective relations with the forces of nature and life, a world of personified actors which he was able to depict, speak to, bargain with, and venerate. It was not a predictable world of regularities, but at least one in which certain rules of conduct could be assumed. The world acquired a human face. But at its outset it was a world without a past or a future. Early cultures lived in the mythological "Here and Now", as the Navajo Indians of Arizona still do -- and as children do in the first years of their life.

The evolutionary approach to inquiry, finally, not only considers psychic receptivity, but also psychic activity as an integral aspect of the evolutionary forces active in the world. "Das Äussere ist das in einen geheimen Zustand versetzte Innere" (The outer is but the inner transformed into a state of mystery) -- Novalis' insight captures this sense of union between subject and object, between the observer and the observed. It is the sense of participation, together with the whole world, in the great stream of evolution which makes it possible to learn about the universe by inquiring into our inner world. It is also the basis and justification of creativity issuing from this inner world; of our outgoing nature, of the active yang in us which acts in conformity with the passive

yin listening to the pulse of evolution in us. Changing reality, then, transcends the mere feedback relationship and mutual adaptation of the mythological approach -- in the evolutionary approach, man imprints himself on the world, shapes it according to his own image by virtue of his feeling himself an agent of evolution, of sharing in the essence of universal motion. Thus, the evolutionary approach corresponds to an essential attitude (as distinct from an existential one), interested in purpose and in the primum movens.

The transition from the mythological to the evolutionary level, from existential to essential attitude, is marked by the dissolution of the boundaries between self and the surrounding world. Witold Gombrowicz [4] has caught this precise moment in which the static mythological world of personified objects merges with the observer, both sides drawn into the same overall rhythm of movement :

Henry (to a piece of furniture) :

Are you looking at me ? I am caught in a network of glances, in a precinct of looks, and everything which I am looking at is looking at me

Even though I'm alone
Alone
Surrounded by this silence ... I stick out my arm. This
ordinary
Normal
Commonplace
Gesture becomes charged with meaning because it's not intended
For anyone in particular ...
I move my fingers in the silence, and my being
Expands itself to become itself
The seed of a seed. I, I, I ! I alone !

And yet if I, I, I alone am, why then

(Let's try that for effect) am I not ?

What does it matter (I ask) that I, I am in the very middle, the very center of everything, if I, I can never be

Myself ?

I alone.

I alone.

The feeling of expansion, of becoming "the seed of a seed", is the direct experience of evolution working within and through ourselves. We become alienated from our subjective mythological world, in which we had established ourselves in the center of a web of feedback relationships. "What does it matter", indeed, once we recognize our own being as a form of expression of an all-embracing evolution -- we can never be our isolated selves again.

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Scientific, mythological and evolutionary modes of inquiry typify three aspects of design applicable to the building of an anthropomorphic world, a world in which man is at home. The subjective mythological level is suspended between two objective levels -- the mechanics of events below, and the meaning and purpose in which human life is embedded, above.

It is dawning on us in many different ways today that the scientific approach is inadequate as an exclusive tool of planning for human systems and their regulation. The mythological approach with its subjective valuation underlies much of current politics and planning which, on its polished surface, is presented as the result of a scientific approach. But it is only the evolutionary approach which allows the capacity for policy design to be fully brought into play for regulating the courses of human systems as

part of the stream of evolution. We are planning for a scientific world, but we are mainly living and acting in a mythological world, and our actions impinge on the course of an evolutionary world. Herein lies perhaps the most fundamental mismatch obstructing our intentions, ambitions, and goodwill, the basic calamity of our time. In rationalizing our world, we tend to reduce action to behavior, quality to quantity, experience to data, values to measure, insight to empirical evidence. Without evolutionary inquiry, we lack a sense of direction, without mythological inquiry a sense of systemic existence. Without both, we separate ourselves from the world in which we live.

We live and act in a specific human way mainly at the mythological level. However, the mythological world -- and it is very important to perceive this clearly -- is an existential world of the "here and now", of spatial relationships and, at best, local processes only. In such a world we are prone to react, rather than act freely. This is the reason underlying the ineffectiveness of planning lacking an evolutionary perspective. In a time of rapid change, such as ours, complex systems of intermeshing feedback loops, with their inbuilt delays in the responses to action taken within the system, can be regulated only by anticipatory action. Planning is about such anticipatory action -- but the naive expectation that it will become effective through rational concepts alone, is self-defeating. Institutional change in the human world has occurred in very significant mutations all through mankind's psycho-social evolution --the shift from hunting and food gathering to agriculture, and further to task sharing, trade, organized settlement, etc. But these were changes in reaction to changes in the relations to the environment and the limitations coming into effect. This is a viable attitude in times of slow change; with the actual

attainment of a widely felt "alarm level" it is then not yet too late to conceive and implement corrective action and massive restructuring. But it is a dangerous and self-defeating attitude in the face of a system dynamics which would let many factors overshoot the "alarm level" if action is not taken earlier, in an anticipatory way. Only an evolutionary perspective of planning, a deeply felt sense of movement and direction, will mobilize and focus the energy within us which will lead to those evolutionary mutations which planning in the context of change is ultimately supposed to structure and regulate.

Effectiveness of planning is linked to the proper use of energy. The corresponding concepts at the three levels are :

-- At the scientific level, we perceive energy as a force causing an object to move (causing a specific effect); force is strictly an ad-hoc view of energy.

-- At the mythological level, we give energy a direction; we may also say, we convert available free energy into power, or action. (In our egocentrism, we often speak incorrectly of the generation of power, or energy, or action -- what a revealing hybris !)

-- At the evolutionary level, we regulate energy flows and conversion processes between equivalents -- energy, matter, complexity, information (negentropy), motivation, etc. Regulation, within a framework of human scope -- in particular, regulation of the energy processes in the physical, social, and spiritual domains on our planet -- is man's chief contribution to evolution.

These different views of energy are already implicit in Aristotle's typology of change processes : locomotion and quantitative change corresponds to energy as perceived at the scientific level; qualitative change to energy at the mythological level; and generation/

corruption (starting and ending in void) to the evolutionary level.

It is highly significant that the same three-level order of inquiry also emerges from modern physical science, as it explores concepts of time, process and organization. Quantum mechanics (1926) shifted the focus of inquiry from the Newtonian force concept to concepts of order and disorder in physical systems and to the quantized interactions within them. The Heisenberg uncertainty principle already points to the impossibility of scientific detachment and "objectivity" in such areas where the process of observation interferes significantly with the process to be observed, for example in the atomic and subatomic domains; it formalizes an aspect of mythological inquiry. General system theory, taking shape over the past three decades [5], attempts to generalize (mainly in verbal concepts) the principles of quantum mechanics for adaptive systems, extending the scope of systems inquiry from the physical to the biological and the social domain (to the extent that the latter is characterized by adaptive modes of self-organization, which capture only partial aspects of social systems). The theory of relativity (1905) focusses on evolutionary inquiry, on the self-realization of events and processes in time and space; it has still not yet penetrated very deeply into our overall relations with the world, and in particular, our concepts in the realm of science.

Prigogine [6] attempts a first synthesis in the physical domain. He distinguishes between the deterministic level, the thermodynamic level, and the level of dissipative structures which correspond precisely to the scientific, mythological and evolutionary levels of inquiry outlined in this paper. Reductionism tries to explain all processes of life at the deterministic level [7] -- and some microscopic aspects may indeed always be explained in a

deterministic or probabilistic mode. But even in the physical sciences, a new notion of quality now emerges at the thermodynamic level -- a quality which is irreducible to quantity. Eigen [8] proposes a new evolutionary principle, basing on the faithfulness, or quality, of the macromolecules in reproducing themselves. Faithfulness itself cannot be measured quantitatively, only the statistical outcome of its optimization in interacting populations of macromolecules. And the macroscopic behavior of all dissipative (sufficiently nonequilibrium) structures in the universe, not just life, now turns out to be truly evolutionary, i.e. moving toward higher states of organization, and not toward higher randomness, as a reductionist view would expect.

The transition between the levels of inquiry, in physics as well as in social exploration, is characterized by symmetry breaking processes.[9] Going from the scientific to the mythological, from the deterministic to the thermodynamic level, implies breaking the time symmetry and introducing the concept of irreversibility; time is given a preferred direction of flow. Passing from the mythological to the evolutionary, from the thermodynamic to the dissipative structures level, implies breaking the symmetry between subject and object, observer and observed. As observers, we assumed for ourselves anisotropy of time -- the capability of making a distinction between the past and the future. At the evolutionary level, we have to recognize now such a "historical dimension" in all dissipative structures, i.e. in the entire nonequilibrium universe including, but not restricted to, the processes of life. Subject and object both become partial aspects of the same overall process of evolution.

right ? how do you draw evil the agate,

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All these approaches may -- and, indeed, ought to -- be employed at the same time, but with a clear understanding of their scope and limitations. The scientific approach is due where, within a certain framework limited in space and time, a mechanistic system may be assumed. Cost/benefit calculations and factor analysis still have their merits in the framework of well-defined operational tasks for which the realization process has been "frozen", as it is for example the case in the operational phase of product development, or in building a hospital or a part of a city once their functions have been determined. The mythological approach is due where the quality of life is to be assessed as a system of manifold relationships between humans and other human and non-human elements in human systems, such as organizations or communities. These relationships are highly subjective and often express themselves also in personal feelings toward objects, structures, or patterns of services. During riots in American cities, the inhabitants of black ghettoes burned their own houses -- not with the purpose of blackmailing the authorities into providing new homes for them, but because they hated their old homes. Social indicators, or the scientific approach, hardly are capable of furnishing valid indications for the interplay of qualities as they are experienced by individuals.

Where the scientific approach elucidates quantity, the mythological approach brings quality into focus. Science has always endeavored to explain a quality, such as hot or bright or green, in quantitative terms -- with some success in many areas. But Lord Rutherford's proud word that "quality is nothing but poor quantification" does not really touch the distinction between scientific and mythological approach; it does not even hold in the "hard sciences" any more. In a world of yet unlimited growth, we are

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experiencing more and more frequently dramatic changes in quality as quantity increases within the same structure. If a hundred thousand cars in a city grow to a million, this affects not only the quality of transportation, but also the quality of life generally in that city. As the whole world approaches limits to quantitative growth, the qualities which the world holds for us, change drastically.

The psychiatrist H. Burkhardt [10] has recently pointed to the basic human need of alternating periods of opening-up and of closure in man's relations to the world. The opening manifests itself in the establishment of sensual-erotic relations, of partnership with persons, but also with the non-personal world; it is lived out at the mythological level. But it needs the structuring and stabilization through the ratio, the temporary closing in a scientific mode of relating to the world. If this alternating rhythm, steered by fear and joy, becomes suppressed, the rational institutions surrounding man lead to a onesided reinforcement of rationality which in turn (according to Burkhardt) leads to alienation and aggressivity. The naive expectation of overcoming aggressivity by rationality, by logical argument, is self-defeating -- as are all onesided concepts.

The evolutionary approach to inquiry focusses on movement, on kinesthetic experience in the widest sense -- the experience of moving with an evolution of which all events and forms in the universe are manifestations. Thus, the evolutionary approach, to the extent that it can be formulated and formalized at all, is due where direction and momentum are to be assessed, or in other words, where the design of a policy comes into focus. With the observer taking part in the movement himself, being source and agent of this movement at the same time, the limitations due to the Heisenberg uncertainty principle -- location and speed of a moving object

cannot be accurately determined at the same time -- do not hold for the evolutionary approach. In fact, location and speed become meaningless notions within a universal process which also unfolds within and through ourselves; what becomes manifest, are deviations in momentum and direction.

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The fragmented world of scientific disciplines is certainly of great value also for the holistic mythological world of integral qualities. The dialectical approach and its generalization in the form of the systems approach [11] provides a method for elevating knowledge obtained by the scientific approach for application in a mythological world. This is also the meaning of interdisciplinarity and transdisciplinarity, if these terms are understood to imply the organization of knowledge toward a purpose.[12] Extending the scope of inquiry beyond rational knowledge to all human experience, may then be called transexperiential inquiry. Such a holistic and dynamic kind of inquiry becomes possible in the framework outlined in this chapter; it would integrate all three levels of inquiry.

The dualistic separation between subjectivity and objectivity, deeply engrained in Western thought, dissolves at the evolutionary level. The scientific approach tries to be objective by virtue of not being involved -- and by assuming a clockwork mechanism which ensures observable regularity. The mythological approach is subjective by getting us deeply involved. But the evolutionary approach is objective at a higher level, because we are not only involved in a process, but <u>are</u> the process itself. In the scientific world, we deal with opposites in a dualistic "either -- or" view. In the mythological world, these opposites become inseparable

pairs -- thesis and antithesis, out of which arises a new synthesis. And in the evolutionary world, finally, the tension between these opposites energizes a pattern of self-centered processes.

We may view life -- or, more generally, evolution -- as a stream. Taking the (1) scientific approach, we stand on one bank and watch the stream flowing by; we do not get wet and proclaim our science to be "value-free". In the (2) mythological approach, we are in the stream, drifting with it in a canoe which we may try to steer as best we can by relating to features which we perceive on both banks; we have no sense of direction and movement per se, but we respond to a series of match/mismatch signals emanating from the situations in which we find ourselves. But in the (3) evolutionary approach, we are the stream, source and flow, carrier and carried, the whole stream and yet only part of it -- as a water molecule is the river and yet only part of it. Where the mythological approach attempts centering between opposites, the evolutionary approach seeks to center the process itself.

The evolutionary approach embraces the mythological, which in turn embraces the scientific approach. We find here a true hierarchucal (stratified) relationship. Descending in this hierarchy increases the resolution of details and gives a better grasp of microscopic processes. Ascending gives increased meaning and order to the lower levels. In the evolutionary approach, the tensions between opposites which, at times, seem to tear the world apart, become the energizing force of a forward thrust. The zig-zag between opposites which may frighten us in a mythological world, becomes a clear course in an evolutionary, finalistic, perspective. "God writes straight even on crooked lines" (Paul Claudel).

Literature references :

1) Eugene P. Wigner, Symmetries and Reflections, Indiana University Press, Bloomington, Ind., 1967.

2) Alexander Gosztonyi, Grundlagen der Erkenntnis, Beck, Munich, 1972.

3) Jean Giraudoux, Suzanne et le Pacifique, Grasset, Paris, 1921.

4) Witold Gombrowicz, The Marriage, Act III, Grove Press, New York, 1969.

5) Ludwig von Bertalanffy, General System Theory, Braziller, New York, 1968.

6) Ilya Prigogine, Time, Irreversibility and Structure, mimeographed manuscript, Brussels 1973 (to be published).

7) Jacques Monod, Le Hazard et la Necessité, Editions du Seuil, Paris, 1970.

8) Manfred Eigen, Naturwissenschaften 48, p. 465 (1971).

9) Ilya Prigogine, Irreversibility as a Symmetry Breaking Process, mimeographed manuscript, Brussels 1972 (to be published).

10) Hans Burkhardt, Die unverstandene Sinnlichkeit, Limes-Verlag, Wiesbaden, 1973.

11) C. West Churchman, The Systems Approach, Delacorte, New York, 1968; and by the same author, Challenge to Reason, McGraw-Hill, New York, 1968.

12) Erich Jantsch, Technological Planning and Social Futures, ABP/Cassell, London, and Halsted/John Wiley, New York, 1972.

A forefront thinker – one of the most advanced at the conference. He seems to be prepared to seek for greater horizons & WAUS may provide them

defines 3 orientations – scientific, mythological, evolutionary