

**FROM DOGMATIC BELIEF TO HOLISTIC VISION:
NONCONFORMIST CONTEMPLATIONS
ON EDUCATION AND HUMAN REALITY**

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A b s t r a c t

This paper is a futuristic venture, a "nonconformist" observation, on our scientific paradigm of the nature of human reality. Specifically, it seeks to open a discussion on how we should understand humanity in terms of education.

The mainstream of the present tradition of pedagogical theory and research has failed to focus on the phenomenon of education as a whole. Certain ambiguity has always surrounded the concept of education and, indeed, the human reality as a whole: What are the definitive qualities of the human reality? Where lies the essential potential of humanity? How can the potential of human reality be realised through education?

In pedagogical science, and indeed in most human sciences, there are very few ontological premises, and certainly no axioms (concerning human reality), that the majority of scientists would generally agree on. Contrary to natural sciences, *human sciences completely lack a solid philosophical ground*. This is to say that, while there are basic coherent assumptions about natural reality, there are virtually no assumptions concerning human reality that would be accepted by all (or even the vast majority of) scholars.

All assumptions concerning human reality arise on an ad hoc or case-to-case basis in each study and they are often only indirectly implicated: *human sciences stand on an illusory ontological foundation*. A systematic ontological and epistemological study of the reality of humanity and society or the process of education is almost nonexistent.

This ambiguity must be reduced, if any explicit discussion of the role of education is sought. There has been, for decades now, a growing need for education to become a *change agent* -- a strategic tool for serious search after goals and models relevant to the future progress of human society. Proper new scientific attempts are necessary if education is to be seriously considered as such a change agent. It is to the provoking of such discussions that this paper hopes to contribute.

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0. BACKGROUND

0.0. Rationale

The title of this paper is admittedly provocative. My intent is not, however, to insult the scholars in the field of education and human sciences nor to undermine their valuable work in these fields. My intention is to address the present tradition of pedagogical theory and humanistic research which appears to serve, for the most part, the sociopolitical requirements of the established academic elite, instead of searching into the whole 'human phenomenon' in order to open new perspectives for the beneficial influence of educational activity. This has narrowed the scope and distorted the development of scholarly exploration.

There has been, for decades now, a growing need for education to become a *change agent* -- a strategic tool for serious search after goals and models relevant to the future progress of human society (see Morris & Krajewski, 1980). Proper new scientific attempts are necessary if education is to be seriously considered as such a change agent because, as it is, education has become more an issue of 'cultured debate' and 'political correctness' rather than a matter of sincere search for truth and solemn commitment to the common good. It is the firm conviction of the author that any attitude of today's educationalists towards their work, other than that of serious obligation towards the *future of mankind*, would be ethically unsound.

0.1. Received Scientific Paradigm on Human Reality and Education

The mainstream of the present tradition of pedagogical theory and research has failed to focus on the phenomenon of education as a whole. Certain ambiguity has always surrounded the concept of education and, indeed, the concept of human reality as a whole: What are the definitive qualities of the human reality? Where lies the essential potential of humanity? How can human reality realise its potential through education?

In pedagogical science, and indeed in most human sciences, there are very few ontological premises, and certainly no axioms concerning human reality, the individual and the society, such as the majority of scientists would generally agree on. Contrary to natural sciences, *human sciences completely lack a solid philosophical ground*. This is to say that, while there are basic coherent assumptions about natural reality, there are virtually no assumptions concerning human reality that would be accepted by all (or even the vast majority of) scholars.

In the overwhelming majority of humanistic research and philosophy today, the overall assumptions concerning human or social reality arise on an ad hoc or case-to-case basis in each study. Even then, these assumptions are seldom articulated but are often implied only indirectly. *Human sciences stand on an illusory ontological foundation*.

This is what I mean, in the title, by "dogmatic belief" or -- even more provocatively -- superstitious dogmatism: *superstition* means belief in something without solid grounds and an adequate justification, while *dogmatism* means unqualified belief in an unconnected or atomistic collection of doctrines. Both are, in fact, forms of blind belief.

Scientific knowledge is also a belief system -- but with adequate justifications where the various '*beliefs*' or '*doctrines*' form a pattern, a coherent whole. Scientific 'tenets' are not (or are not supposed to be) elements in an arbitrary and unconnected list.

In this sense, human sciences in general and the educational field in particular are not based

We can, thus, say that education is not, as yet, an “exact science”. Here, “exact” does not, of course, imply *absolute* accuracy in relation to the objective reality, rather, the kind of relative accuracy is meant as is attained in such sciences that are grounded upon a *universally upheld axiomatic foundation* -- i.e. *a coherent system of axioms* acknowledged by the generality of the scientific community. It is precisely this coherent system of axioms that would make possible “scientific belief” as described above. In such sciences, proposed hypotheses can explicitly be founded, either deductively or (more often) inductively, upon such axioms and the validity of those hypotheses can then be examined or tested through observations of facts and the reality.

It must be noted, however, that, while this conception of science is conventionally considered as *positivistic*, in this discussion, the static and deterministic world view as well as the accompanying mechanistic approaches often implied by the positivist or naturalist tradition are, categorically *not* endorsed. Even the requirement of a coherent system of axioms may, at least at this point, be out of reach because, strictly interpreted, axioms must be fully constructed on the basis of the laws of formal logic or mathematics. Therefore, we must contend ourselves, for the time being, with a somewhat looser requirement of a system of *coherent and universal ontological premises*. Such a system will not demand structures created through formal logic and mathematics but can, still, be constructed so that it is internally coherent and consistently upheld in all deductions. While prone to arbitrary selection (demanding philosophical vigilance and ethical honesty on the part of the scholars), such a system could maintain vast latitude for the variety and diversity of methodology and approach.

In pedagogical science, and indeed in most human sciences, there are very few ontological premises, and certainly no axioms, that the majority of scientists would generally agree on. Consequently, most of research in education is essentially descriptive, and, of the smaller number of non-descriptive studies, only very few deal with *universal* concepts. This is to say that pedagogical research is mainly concerned with surveying educational situations, cases, models or specific phenomena -- not developing the *theories of education per se*. In other words, we have mostly dealt with the “specifics” of education and not its “universals”, i.e. a generic ontological and epistemological study of the phenomenon of education.

0.2. A Strenuous But Necessary Quest

The dilemma is, of course, understandable because, in order to make statements on education, one must first establish ontological premises on *the reality of the human being*; for, without such commonly agreeable premises on human reality, it is impossible to form a universal conception of *educating* that reality (cf. Canadian Commission for UNESCO, 1990, pp. 33-34). It is not difficult to imagine the controversies that can rise and, in fact, have risen as a result of the search for a common conception of human reality, which is precisely why the vast majority of human scientists has now abandoned this task.

But this question cannot be eternally avoided -- it is too fundamental. If the standpoint on human reality is not properly addressed and if some unified understanding on its fundamental quality is not reached, human sciences will find it hard to demonstrate their credibility and become recognised as “true” or “exact” sciences (as defined above). Perhaps, the various world views present within the experience of mankind can, on their part, contribute in this quest for a holistic view on the reality of man (cf. Ereira, 1990, pp. 228-230); perhaps, for the first time in human history, we have the means to make a collective effort to clarify our view of ourselves (both as individuals and as societies); and perhaps, this effort should not be only that of scholars of the field but a soul searching enterprise for the generality of mankind. I hope this paper will, in some small way, contribute to the stirring of such deliberations.

1. PURPOSE AND THEORETICAL FRAMEWORK

1.0. Current Theoretical Prospects

It would be unrealistic to form consistent premises on human reality unless *reality itself* is addressed. Today, natural sciences such as theoretical physics and post-Darwinian biology and genetics, together with advanced mathematics are reforming our understanding of reality. Along with these have come sets of new philosophical standpoints that help make this new perspective into a *holistic worldview*. Among these are some neoplatonist notions that stem from the philosophical implications of Systems Theory and Chaos Theory -- both of which are essentially fields of logic and mathematics but their implications are increasingly used in philosophical notions of natural and human reality. Such notions we generally identify here as *systems philosophical*.

These new modes of thought are not merely issues of philosophical curiosity: they provide insight into the interrelatedness of different aspects of reality and help perceive the holistic nature of our global concerns. Futurists around the world are trying to make use of such theories in suggesting strategies for development. Within such perspectives, it may also be possible to approach the ontological question of human reality on a broader basis.

1.1. Purpose and Research Tasks

It is to the task of addressing the “universals” of education, forming a holistic philosophical framework for the theory of education, that I hope to contribute in this paper. Of course, no claim is made on completing such a task or even a major part of it; that must emerge as a result of a long process of contemplation, research and interaction by numerous contributors. The aim is to make a start in placing the science of education in a broader theoretical framework that fits also other domains of reality. For this end, a *systems philosophical* approach is adopted. The purpose of this paper is:

To propose a tentative futuristic systems philosophical theory of education.

By this is meant a theory that (a) embeds education in a *holistic philosophical frame* of reference; (b) depicts the futuristic character of education as a *change agent* in society; and (c) facilitates educational *trends analysis* in support of progressive planning of social development.

Thus, the postulates are systems philosophical statements (see Section 1.2.), and the hypothesis will claim that, if systems philosophy is applicable to education, certain claims follow (see Section 1.3.). Of special interest will be those systemic statements that characterise evolutionary laws and causalities and are, thus, descriptive of *macro-deterministic* trends in the history, development and future of systems.

Our tasks are, then, the following: (a) to depict, as *postulates*, systems philosophical universal statements on reality in general; (b) to deduce, as *hypotheses*, systems philosophical statements on education; (c) to conceive, as a *theoretic test* for the hypotheses, a further (recursive) hypothetical model of education as a trend maker and change agent. On the basis of these it would be possible to conduct an *empirical research* for examining the validity of the recursive hypothetical model relating them to postulates and forming "a tentative futuristic systems philosophical theory of education". This, in fact, I intend to do during the coming spring semester.

tenets are still rather fluid -- Systems philosophy has, as yet, no firmly established doctrine. The fundamental principle of the systems philosophy is, however, an ontological standpoint that implies, in fact, a specific kind of Platonist view: *all systems are synergic, they are more than the sum of their constituent elements* -- i.e. all systems are characterised by qualities that exist independently and are not reducible to the attributes of the system's parts. This refutes reductionism as an exhaustive means for obtaining understanding of a given phenomena and justifies our greater concern for the "universals" of education over its "specifics". The principle further implies that there are principles and conditions that apply to *all* kinds of systems; this signifies that there are principles and conditions that apply to *seemingly unrelated* systems.

Systems philosophy includes also the notion of the hierarchy of systems, elaborated on by various writers in the field (e.g. Harman, 1988, pp. 92-99; Russell, 1983, p. 54). We begin our postulation with defining relevant categories of Systems; in this work, the postulated hierarchical division of systems into two categories will suffice:

POa *Platonic systems*: Systems of unconditional universal principles and laws, abstract forms, objects that are not time-bound nor material (e.g. the system of the laws of nature, or the reality explicated by systems philosophy).

POb *Contingent systems*: Systems of dependent provisional phenomena, observable occurrences, entities that are time-bound and dependent upon situational conditions and are, in some manner, evolutionary (e.g. natural phenomena, biological entities, or sociocultural structures).

More detailed categories under these two may be developed, if needed. The following *general postulates* characterise systems *per se*:

P1a *Synergy*: All systems have synergic attributes which cannot be reduced to the sum of the qualities of their elements.

P1b *Unity*: All systems are either subsystems or projections of other systems and, therefore, the 'System of all Systems' is one, i.e. *reality* is one (cf. Russell's Paradox in set theory; Russell. 1903).

These postulates yield an interesting notion on the Systems theoretic concept of "advantage": in the last analysis, the advantages of all systems converge and correlate and, in the long run, the advantage of the part depends upon the advantage of the whole. *Contingent* systems are subject to further *evolutionary postulates* outlined in the following statements:

P2a *Teleological Principle*: All contingent systems are teleological projections of some platonic system.

P2b *Progressiveness Principle*: All contingent systems have a platonic potential that is not present at once but unfolds progressively in an evolutionary manner.

P2c *Complexity Principle*: In all contingent systems, greater complexity can make possible a fuller expression of the system's potential.

P3a *Positive-Negative Feedback*: All contingent systems evolve and manifest their potential progressively through a process of success and failure, the strengthening or weakening effect of the feedback coming from the reactions of their parent and sister systems (of particular

Postulates P2a, P2b and P2c deal essentially with the concept of *potential*. Here "potential" is defined as the *platonian reality and origin* (see postulate POa) of a contingent system. Thus, evolutionary entities, while themselves contingent systems, have each a potential which is a platonic system. Postulates P3a and P3b are concerned with the *context* of evolution – the interdependence of the development of contingent systems.

The general tone of our postulates is *macro-deterministic* and *teleological*. Along these lines, subsequent postulates may be formulated, if needed, placing specific emphasis on the evolutionary postulates. Ervin Laszlo has done a pioneering work on the application of systems philosophy to evolutionary futures research; this groundwork will be utilized, as much as possible, in theory building and research design. (Laszlo, 1972; Laszlo, 1987; Laszlo, 1996a; Laszlo, 1996b; see also Mannermaa, 1991.)

1.3. Hypotheses: Systems Philosophical Statements on Education

In this section, the purpose is to outline the research hypotheses, which are derived from the postulates. These hypotheses must come under close scrutiny so that their validity or invalidity can be examined. Our primary, most generic, hypothesis is:

110 Systems philosophical principles are applicable and systems philosophy is relevant to the science of education.

If this is true, then certain systems philosophical claims about education are also true; thus, further hypotheses are deduced by expressing systemic statements in terms of the *phenomenon of education*. First, there is an ontological choice to be made: Is education a platonic system or a contingent one? Education, being a highly equivocal concept, can signify both types of systems as well as things, which are not clearly identifiable systems or, even, not systems at all. Our hypothesis, as deduced from postulates POa, POB and P2a, will be:

111 Universal Education: Education is, fundamentally, a platonic system, which is projected in contingent systems -- i.e. education is a universal function (similar to laws of nature) manifest in all evolutionary contingent systems (biological, ecological, social, mental or other).

Deducing from evolutionary postulates P2b, P3a and P3b, one can characterise this universal principle of education as the following hypotheses:

112 Evolutionary Education: All evolutionary systems have a unique teleological potential that becomes manifested only gradually in an 'educational' process through the internal transformations of the system.

This process of the system's "internal transformations" is not, however, independent:

113 Education through Positive-Negative Feedback: All evolutionary systems receive, from their parent system or sister systems, positive or negative feedback on their own emerging transformations and, thus, evolve and "learn" their way towards their potential through success and failure (cf. the success and failure of emerging mutational transformations in biological entities).

Moreover, the process has a synergic aspect:

115 Education through Unity in Diversity: The potential of all evolutionary systems is best

Education is the holistic process of transformation that guides a system's evolution towards the realization of its potential.

Now, we must differentiate between education as a *universal phenomenon in creation* and education as a *form of evolving peculiar to humans*. The idea is that, in accordance with postulate P2c, in more developed (complex) systems with *memory, consciousness* and *volition*, the process of education manifests additional features and qualities.

In general, the educational feedback described in hypothesis H3 effects immediately, on a case-to-case basis, the success or failure of a specific feature in the system. In *memorizing* systems, like animals and humans, there are also 'delayed' effects of the feedback -- the system can react *later* to *earlier* feedback experiences. The hypothesis is then:

115 Education through Conditioning: In memorizing systems, positive-negative feedback experiences influence also future situations and, thus, effect gradually the decline or flourishing of a given feature.

This is a form of education that, not only corrects the immediate situation, but inclines to behave in a certain manner *in future* situations. This is generally known as "conditioning".

Moreover, in *conscious* and *purposeful* systems (see. Russell, 1983, p. 55), like human beings, the educational positive-negative feedback process may not be self-operating or "natural" but rather come through deliberate input (from an educator); hypothesis:

116 Education through Conscious Feedback: The positive-negative feedback process of education is universal and self-operating but, in conscious purposeful beings, it can also be deliberate and intentional -- i.e. education, as a system, can include educators.

This deliberate positive-negative feedback is known in common language as "reward and punishment". Education through intentional feedback is something peculiar to human beings. It is the existence of such education that makes possible the adoption of educational goals and objectives; it is such education that awakens consciousness of consequences and orients intentions. And, such education can be applied both to individuals and to societies -- both are "conscious and purposeful" systems. It must, moreover, be remembered that such education does not come only *externally* but also, very significantly, *internally* by the one being educated, -- i.e. self-education.

From hypotheses 113 and H6 a further futuristic hypothesis on education can be derived:

117 Education as Change Agent: It is possible to systematically influence the future of individuals and societies through the choice of educational goals and models -- education can be a manageable change agent, a strategic tool, for building the future, through conscious individual and collective decision-making.

Here the emphasis is on *manageability*. There is nothing special about the observation that education influences the future, but it is crucially significant that, through education and relevant decision-making, the future course can be consciously manipulated and managed -- at least to some degree.

Interesting as these hypotheses may be, they would remain only matters of curiosity and even become dangerously prone to misuse for the justification of selfish ends, if there was no hypothesis on the nature of *educational goals* that can or should be applied. Are educational goals matters of preferences? Are they normative issues that can be put into no objective

This is a logical claim, because, according to the earlier hypotheses, education is a platonic system with universal principles and it is projected in evolutionary systems, which have an innate potential that can be progressively manifested. This means that educational goals and human values have, in fact, an objective standard -- the standard set by *the principles relevant to the realisation of their potential* -- however unattainable in its purest and absolute form that standard may be (see Ganguli et al., 1981, pp. 198-203; Kohlberg, 1981, pp.412; UNESCO, 1965, p.60).

This principle of potential being revealed through education -- of the essential nobility and collective reality of that potential, of conscious educational efforts of human beings to bring it into fruition -- is not unknown to the spiritual legacy of humankind. The distinguished Persian visionary and teacher, Baha'u'llah (1817-1892), wrote over a century ago: "*Regard man as a mine rich in gems of inestimable value. Education can, alone, cause it to reveal its treasures, and enable mankind to benefit therefrom.*" (Baha'u'llah, 1952, p.260.)

2. RESEARCH DESIGN

2.0. Method of Research

The hypotheses of this work, put forth in Section 1.3, are very abstract and conceptual. Then, the question remains: How can one conduct an empirical research on such hypotheses? How can one test their validity? Of course, one cannot -- not directly. The nature of this work is, in any case, both speculative and preliminary because it deals with the very basic ontological premises of the science of education.

However, there is a way of obtaining some *tentative and indirect* empirical results about the validity of, at least, the aggregate of the hypotheses. The hypotheses deal with the philosophical basis of the whole science of education -- i.e. the implicit premises upon which the various educational theories can be based, the *metatheory* of education, if you like; if these hypotheses would, as a test, be considered as the established philosophical premises of the science of education, then educational theories should be based on these premises -- upon that basis, educational theories would build their hypotheses; and, *these* theories may well come under empirical research. The results of such a research, although not directly validating or invalidating the original (metatheory) hypotheses, would be indicative of the general applicability or non-applicability of a systems philosophical approach to the science of education.

In short, the method is to create *a testing theory which uses as its postulates the hypotheses of this work*. An empirical research on the validity of the hypotheses of this *recursive* theory, then, would provide tentative *secondary* feedback on the original hypotheses of this paper. Thus, the research approach is the following; (a) consider the hypotheses of this paper as postulates; (b) on the basis of these "postulates", recursively create hypotheses for a testing theory; (c) design an empirical research to examine this recursive theory; (d) draw, from the findings of this research, conclusions on the recursive theory; (e) recapitulate, from these results, conclusions on the original hypotheses; and (f) relate the outcomes of the study to build "a tentative futuristic systems philosophical theory of education".

2.1. Recursive Theme

What would be a good topic for a recursive theory using as its postulates the hypotheses of

require a decade-long research project (and that, even, might not suffice). However, since our main purpose here is to test the applicability of systems philosophy to the science of education, we seek only a *tentative* and *direction-giving* result on the recursive theme and we will, therefore, suffice with an equally tentative research for studying it. The method of this study must, still, be systematic and thorough.

2.2. Recursive Testing Hypotheses

So our task, now, is to generate a (recursive) theory about the influence of education and decision-making paradigms on the future of society; and, we have to start recursively by generating hypotheses for this theory, our postulates being the original hypotheses of this paper. (From now on, references to postulates refer to the numbers of original hypotheses, H#. and references to hypotheses refer to the numbers of recursive hypotheses, h#.)

First, a distinction must be made between the *professed* paradigm and the *practised* paradigm of education (cf. "hidden curriculum") -- i.e. the values, models and goals that are consciously (either openly or secretly) chosen and professed by a society vs. those that are actually (either knowingly or unknowingly) adhered to and practised by that society and its members. This distinction will be essential in the further formation of recursive hypotheses and the problematisation of our theme.

Postulates H1, H2 and H8, justify the following hypothesis:

h1 *Objectively Relevant Paradigm.*: The society's education and decision-making paradigms, the values and models and goals to which a society adheres, are not just a normative matter of preferences or tastes -- they are objectively either conducive to the realisation of the potential of that society, or they are not.

Further implications of the society's educational potential and relevant universal principles can be derived from postulates 114 and 118 and the present world situation; hypothesis:

h2 *Global Social Potential*: The potential of all societies, today, is to attain to unparalleled achievements through concerted effort with other societies, and the relevant universal principle to adhere to is Unity in Diversity.

This implies that today, for the first time, it is realistically possible (although not easy) for all societies to reach for unique accomplishments by unifying into a world community where there is commitment to common goals in collectively essential matters while, at the same time, there is considerable complexity and broad latitude for diversity of thought and culture in matters that are secondary in relation to collective interests (cf. original postulates P2c and P3b). In terms of the deliberate (human) and self-operating (natural) feedback process of education, postulates 113, H5 and 116 give grounds for this hypothesis:

h3 *Effectiveness Condition*: If the practised education paradigm in a society is conducive to the realisation of its potential and supports relevant universal principles, the deliberate (human) feedback process of education will be effective, i.e. will amplify and strengthen the self-operating (natural) feedback process of education and result in a more efficient realisation of the society's potentials -- otherwise, the process is complicated, becomes more painful and chaotic, and, in the long run, the self-operating feedback process of education will prevail, resulting either in an evolutionary breakthrough or in a breakdown in the society's evolution.

This indicates further derivatives of the same hypothesis: (**h3^a**) if the *practised* education

Moreover, education as a manageable change agent would signify, on the basis of postulates 117 and 118, the following hypothesis:

h4 *Predictability Condition:* If the practised education paradigm and the decision-making paradigm in a society are conducive to the realisation of its potential and support relevant universal principles, their influence on the future of that society will be predictable -- i.e. will be as projected in practised educational goals and the decision-making process, at least in the long run.

In other words, if the practised education paradigm and the decision-making paradigm are *not* conducive to the potential and relevant principles, their influence on the future of the society will not be as projected in practised educational goals and the decision-making process, at least not in the long run. Put in yet other words, *values, models and goals that are based on non-relevant paradigms (in terms of the potential) will, ultimately, not be attained.*

These hypotheses result in two summarizing hypotheses:

h0a *Change Agent Condition:* Education is a manageable and effective future change agent for a society only if both the practised and professed education paradigms, as well as the decision-making paradigm, are conducive to the realisation of the potential of that society -- the potential to evince the principle of Unity in Diversity and engage in synergic interaction with other societies.

h0b *Trend Analysis Condition:* Education paradigm analysis is, in fact, future trends analysis in that, if the practised education paradigm and the decision-making paradigm promote the potential of the society, the future trends are aligned with the educational goals and the decision-making process -- if not, the trend will be a progressively chaotic process towards either a revolutionary reform in accordance with the potential or a chronic state of disorder and final disintegration.

2.3.Problematisation and Data Acquisition

Now an empirical study must be designed to examine the validity of the hypotheses of our recursive theory. The hypotheses can be tentatively tested by answering the following four questions in at least two comparative societies:

Q1 *What is the realised potential of the society as observable from the development of the past two generations -- i.e. what values, models and goals of the society have consistently and persistently become apparent and continued to be present and develop in that society (the contrast of the present with the past)?*

Q2 *What has been the practised education paradigm during the past two generations -- i.e. what are the paradigms that have actually, either knowingly or unknowingly, been adhered to and practised by the society and its members?*

Q3 *What has been the professed education paradigms during the past two generations -- i.e. what are the paradigms that have consciously, either openly or secretly, been chosen and professed by the society?*

Q4 *What has been the level of steady progress or, alternatively, the level of unrest and disturbance in the society during the past two generations -- i.e. the level of consistent/stable*

r0 Results on Q1 support h2.

Hypotheses h3 and h4 will be considered-- at least tentatively-- correct if r0 is positive *and* one of the following rules also holds:

r1a Results on Q2 and Q3 match the realised potential (Q1), and Q4 is consistent/stable.

r1b Results on Q2 match but results on Q3 do not match the realised potential (Q1), and Q4 is somewhat inconsistent/unstable.

r1c Results on Q2 do not match but result on Q3 match the realised potential (Q1), and Q4 is eventually inconsistent/unstable.

r1d Results on neither Q2 nor Q3 match the realised potential (Q1), and Q4 is inconsistent/unstable.

In any other case, there is no support for the validity of hypotheses h3 and h4. Moreover, quite straightforwardly, hypotheses h1, h0a and h0b are, at least tentatively, correct under the following rule:

r2 There is sufficient grounds for h2 as well as h3 and h4.

In order to efficiently study Q1, Q2 and Q3, there is a need to identify certain descriptive features of the target societies. In our context, the following features can be considered relevant and must be examined:

f1 The values system;

f2 The world view or belief system;

f3 The models of personal interaction; and

f4 The model of social order

Of course, such features are not unambiguous in the sense that all the members of a society would follow a single pattern but (consistently with the original postulates P1a and P3b) we can assume that there are aspects to these features that *are descriptive of the whole target society* and can, despite the diversity of individual members and subgroups, be considered as *synergic patterns* in a society (cf. Diesing, 1971, p. 139).

To examine such synergic features, a series of further clarifying questions need to be answered which would serve as *indicators* of these features:

i0 What things are actually done in the course of education and decision-making?

ila What life models and goals are supported?

i1b What values are upheld?

i1c What view of the human reality is transmitted?

i2a What modes of human relationships are sustained?

i2b What practices of social influence are endorsed?

j2c What patterns of individual and collective decision-making are followed?

i2d What type of social order is applied?

i3a What beliefs concerning "cause and effect" are emphasized?

i3b What ontological and epistemological beliefs are implied?

These indicator questions must be answered successively in the order given; thus, each

All these indicators and resulting synergic features must be studied in three different manners -- from three points of view and based on three sets of data -- in order to answer the three questions Q1, Q2 and Q3. The data basis for Q1 must be both present and historical facts as well as relevant documents throughout the period under survey, i.e. two generations. The data for Q2 will be obtained through interviews, which scan, indirectly, the educational paradigm during the period being studied; in this, indicator i0 must be used as a central source of information and point of reference for other indicators. The data source for Q3 will be interviews which ask, rather directly, about what was believed to have been the education paradigm during the two generations period; in this, all indicators play equally important roles.

The examination of Q4 must be done through a study of social relationships and abrupt events and changes in the target society during the period of time under study. Relevant data for Q4 must be gathered from historical facts and relevant documents. Perhaps, there may arise a need to develop specific indicators for Q4 as well.

The study involves some strategic criteria. It is not sufficient to inquire into the indicators of educational paradigms only on a general level. Human beings' sensitivity to learning and transformation, to assimilation and change, varies in different periods of life. This is both a well-known fact and consistent with the evolutionary systems theoretical notion that *systems attain essential transformations mostly during turbulent periods of bifurcation and instability*. Analogous phases in human life can be identified, e.g. the very first couple of years of childhood or the age of puberty and maturation according to developmental psychology. The study must expose *the educational feedback process* especially during such phases, because it is in such times that success or failure, reward and punishment, effectively facilitate or hinder the adoption of values, models and goals.

Moreover, data input should be obtained from a variety of educational providers, educators, the home, the social background, peer groups, the media, the formal education system, the decision-making and administrative system, expert forums, etc. Where a significant majority of these inputs correlate, the *synergic features* can, perhaps, be detected.

Most of the data for the indicator questions will not be acquired through systematic interviews. The data will, for the most part, be acquired by engaging in open, often spontaneous, discussions with different groups of people representative of the spectrum of "educational providers" within both target societies. These discussions are stochastic in nature: the researcher will only "tune" the discussion through strategic comments in order to prompt the discussion of relevant issues that would expose the views of participants on the indicator questions. The discussions are recorded and the actual answers to the indicator questions must be filtered from this data.

2.4. Field Work

The empirical research must be conducted among various people and on various levels of, at least, two societies. These societies need to be such as would possess *established paradigms* of education. Such established paradigms are, at present, best perceivable in *national cultures*, because they are still isolated enough to have distinctly peculiar features, they are like giant laboratories testing different education paradigms. Thus, we will examine, the education paradigms of two or three nations, which must be different enough from each other to form distinct characteristics. The choice of particular nations is, of course, limited by the possibilities of the author. In this case, the *Finnish* and the *Russian* cultural and political contexts seem plausible; these two cultures have very different historical backgrounds and their mentalities and systems of thought have also remarkable differences. The addition of a third national culture may

groups, private homes etc. -- usually in connection with activities other than those specifically designated to this research.

3. RESEARCH RESULTS

3.0. Theory Building

Results of the empirical research on the recursive theory will consist of an analysis of the *realised potential*, of the *practised education paradigm*, and of the *professed education paradigm*, as well as of the *pattern of change* and development in the target societies. If the results of this study support the recursive hypotheses in accordance with Section 2.3., there are grounds to assume that also the original hypotheses (H1-H8) may have a valid basis and that the main hypothesis (*HO*) can, now, be studied further - that *systems philosophy may well be applicable and relevant to the fundamental premises of the science of education* and that this possibility needs to be investigated thoroughly.

Then, a *tentative futuristic systems philosophical theory of education* can be formulated on the basis of these results and original postulates and hypotheses. As outlined in section 1.1, this theory must (a) embed education in a holistic philosophical frame of reference, (b) depict the futuristic character of education as a change agent in society, and (c) facilitate educational trends analysis in support of progressive planning of social development. Obviously, this "tentative futuristic systems philosophical theory of education" must fulfill the following general criteria: it must be in full agreement with the tentative results of the empirical research on the recursive theory, it must be in agreement with other relevant facts generally present in the world, and it must be free of internal flaws of consistency and coherence.

3.1. Possible General Benefit from the Results

This is basic research and, as such, may not have many immediate practical applications, but the discussions and processes provoked by it may well give reason for practical considerations in curriculum development, civic education and teaching methods as well as in the educational activities of governmental agencies, NGOs (non-governmental organizations) and informal forums and groups concerned with the future of society. One motive of the author in undertaking this task is the arousing of just such sociopolitical awareness and civic activity.

The research results are hoped to contribute to a gradual emergence of a new understanding of *the role of civic participation as a change agent in the society* and *the significance of relevant education and decision-making paradigms for the future of civilisation*. I believe, however, that such an understanding can truly emerge only as a patient outcome of a prolonged process of synergic interaction between concerned elements of the society, including governmental agencies and scholarly institutions but *especially NGOs and the rank-and-file of the world population*. The tremendous progress, during this century, in the communications technology provides an increasingly powerful means for this purpose.

3.2. Synergy with Other Fields

The theme of this work has been very little dealt with in earlier educational works. As the nature of this study will be interdisciplinary, the results bear on several branches of science. Obvious connections are, of course, with futures studies and sociology. If, as it is hoped, the

4.EPILOGUE

Two complementary social forces upholding human societies can be distinguished: (a) the power of *tradition*, i.e. the inclination to preserve the achievements of the society, and (b) the power of *progress*, i.e. the aspiration to promote further development of the society. Both serve the evolution of society -- the one seeks to conserve gained advances against deterioration, the other aspires to achieve new advances.

In stable times, where no dramatic change is imminent, both tradition and progress play complementary and equally significant roles. But, in tumultuous periods of possible evolutionary breakthrough, these two forms of 'social loyalty', if so we may call them, are polarized as opposite competitive forces. Tradition becomes a mainly decelerating force whereas progress becomes a chiefly accelerating force to development. If the force of progress prevails and taps tradition to its use, the evolutionary leap will be easy and smooth; if the force of progress is overcome by tradition, the process will become complicated, more chaotic, painful and can possibly even lead to collapse.

The turbulence of our times represents just such a case of dramatic change with evolutionary potentials and threats -- and, for the first time in known history, on a *global* scale (cf. Boulding, 1988, p. 116; King & Schneider, 1991; Laszlo, 1989, pp. 122-124; Moskowitz, 1968, p. 71; Russell, 1983, p. 55). In such a situation, a delicate challenge is to neither let tradition hinder new progressive models from emerging nor to let progress, in its aggressive drive, neglect the vital experience and achievements of the past.

This dichotomy of social forces can, also, be seen in the role that is conventionally assigned to education: preserving the society and sustaining its continuity. But, in the face of the present world paradigm, this twofold profile emerges in a sharper contrast: (a) education must ensure the transition of past achievements to the future and apply them to emerging global conditions; and (b) education must transmit such *new* values, goals, world views, models and skills as are essential for the reconstruction of the human society in this uniquely global period of history.

Idealistic as such requirements may seem, it remains a true condition that we live in the first known global paradigm of mankind; no one has prior experience of such a situation and no unprejudiced spectator can seriously claim that humanity's past experiences and knowledge are sufficient for mankind to survive its new predicament and make it a successful evolutionary breakthrough (see Fromm, 1976, pp. 9-10; Commission on Global Governance, 1995). In such a situation, the role of education as a *change agent* cannot be over emphasized, nor can the task of pedagogical science to provide a *holistic frame of reference* be overestimated.

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