

The Teilhardian Vision in a Theory and Praxis of Sustainable Development for the Millennium

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THE GLOBAL CRISIS:

Teilhard's works were written before poverty and ecological destruction on a global scale had become a global concern.

He had passed away when, in 1962, Rachel Carson's *Silent Spring* painted for the world the ugly, *kakotopia* it was creating with the effects of its production technology; when some ten years later the Stockholm conference sounded the wake up call and some 20 years afterwards, the Brundtland Commission declared the achievement of sustainability in development a matter of planetary survival, and in 1992, the world's heads of state met in Rio de Janeiro to approve Agenda 21. Another ten years and another Summit in Johannesburg concluded that not enough had been accomplished, reaffirmed commitment to Agenda 21 and approved the Johannesburg Plan of Implementation.

Evolutionists had joined the warning calls. In the year of the Rio Summit, Edward O. Wilson, the Darwinian sociobiologist, published his work on the vital role of biodiversity as the "key to the maintenance of the world as we know it."¹ In 2002, the year of the "Rio plus ten summit", Erwin Laszlo who had written the new Synthesis of Evolution in 1986, had voiced his own warning: "We live at a critical juncture in the history of our species, when a mode of evolution that was dominant since the advance of the Neolithic creates unsustainable conditions."²

Teilhard's vision of the future, extrapolated from his evolutionary vision of the past, but focused much farther out in time, had been more optimistic.

This paper has an explicitly and brazenly practical *quaesitum*: how to understand and manage the problem of poverty and environmental destruction. "Sustainable Development" has been offered as the cure. But what does that mean? Why has human evolution not achieved it? What can evolutionary science offer in this quest?

It is inspired by the intuitive hope that the Teilhardian evolutionary vision of the past will offer what the Darwinian has not delivered. In this brief paper it has only been possible to present seminal reflections and a possible program of research to pursue promising leads.

APPROACH AND METHOD

The sustainability discourse has led to a practical question: how do we operationalize sustainable development so its imperatives are mainstreamed in day-to-day human actions?

It is a question of organization and management. Through what forms of organization and by what decision logics are day-to-day decisions made now regarding the use of the earth's resources?

For the past two hundred fifty years, the ruling economic and social order has centred on the profit-seeking enterprise as the paradigm of organization units, its profit-seeking logic the law of behavior, and the mechanism of free, competitive markets the pre-eminent basis for the valuations that determine optimizing choices.

So now we live in a world in crisis where the very survival of humans and the planet is in jeopardy.

The social sciences have not been of much help in either the understanding or the management of the crisis. Natural science has made great strides and provided valuable insights into the physical, chemical and biological micro- and macro-processes of the universe, the planet and its living inhabitants. Social scientists have increasingly turned to evolutionary science to find more appropriate metaphors and analogues to illuminate the dark recesses of the human development process and the conditions for its sustainability.

But here the quest is complicated by the variety of theories that model the evolutionary transformations evidenced by both the growing fossil record and the rich new insights into physical, chemical and biological processes provided by the "New Science."

The scientific paradigm, ideology and utopian vision that has ruled the planet since the late 18th century has been based on a particular theory of the evolutionary process. The leading proponent of the theory (although not really its founder) is Charles Darwin. His mechanistic model of the evolutionary process attributed to natural selection based on the "fitness" of individual organisms in a fiercely competitive world has become the paradigm for social, political and economic policy over the past nearly two hundred years.³

Some of the secondary propositions of the Darwinian theory have been changed in the face of increased fossil evidence – e.g., the gradual and continuous process of transformation of species and phyla⁴ – but the core hypotheses remain: the view of atomistic individual organisms as the units of evolution; the random and purposeless directions of transformations; the mechanistic and "spontaneous" character of the transformation process and the absence of anything but physical/material forces energizing the transformation – core postulates that keep the theory within the realm of positive science and away from recourse to any sort of metaphysical explanation of

causation. Certain recent attempts to derive insights from evolutionary science to address the contemporary crises of sustainable development illustrate the problem.

What can we learn from the Teilhardian vision of past and future to give us deeper insights into the nature of the crisis and the modes for addressing it?

This is a seminal laying out of a *research* agenda informed by the Teilhardian paradigm. It is research more in the spirit of the Continental meaning of “*Wissenschaft*” than in the Anglo-Saxon meaning of “science” because it involves more reflection, more “theorizing”, if you will, than fact-finding empirical surveys.

A quest for insights that will guide understanding towards practical organization and management cannot be constrained by rigid metaphysical postulates such as those that rigorously limit explanatory analysis in positive and reductionist science. It must be open to the wider choice of metaphors, analogues and homologues in the process.

The study leans heavily on theory, a mode of critical theory that takes its cue from Jurgen Habermas whose quote from Schelling reflects the spirit of the quest:

“The fear of speculation, the ostensible rush from the theoretical to the practical, brings about the same shallowness in action that it does in knowledge. It is by studying a strictly theoretical philosophy that we become most immediately acquainted with Ideas, and only Ideas provide action with energy and ethical significance.”⁵

Habermas then writes: “The only knowledge that can truly orient action is knowledge that frees itself from mere human interests and is based on Ideas – in other words, knowledge that has taken a theoretical attitude.” He then proceeds to discuss the origin of the word theory from its Greek religious roots: *theoros* being the representative sent by Greek cities to public celebrations and *theoria* he abandoned himself to the sacred events. In philosophy *theoria* acquired the connotation of “contemplation of the cosmos.”⁶

EVOLUTIONARY SCIENCE

The fossil evidence and the data of physics and biology show a range of structures of material particles and living cells and organisms that may be classified in ascending degrees of complexity of physical and biological “architectonics.”

Over the centuries the data have accumulated and, as human science and observation and measuring technologies and methods have advanced, become more detailed and finely measured and quantified. The sciences of geology and palaeontology have built up the fossil data. Physics, chemistry, biology, ecology and ethnology have advanced models of physical and biological processes.

Darwin’s revolution followed a development in evolutionary thinking stretched over

centuries wrought by schools of natural philosophers in the ancient and medieval worlds, and “science” and *Die Wissenschaftler*, practitioners, in the modern western world informed, consciously or unconsciously, by different metaphysical assumptions. Differences in metaphysical assumptions make for differences in positions with respect to criteria and tests of validity and truth and definitions of scientific knowledge.⁷ Even subtle differences, for example, give the meaning of continental *wissenschaft* a somewhat larger scope than Anglo-American notions of “science.”⁸

Under the influence of these assumptions, taxonomy has established classification schemes grouping the data into categories differentiated according to physically identifiable and measurable characteristics and properties.

In the human search for origins and for efficient and first causes of observed phenomena, two schools have emerged over the centuries: creation and evolution. The two schools might be sub-classified into weak and strong positions. Strong creation position holds that every species was the object of particular creative acts, and weak permits of transformation or evolution of phyla and species after a first creative act. Conversely, a strong evolution position rules out any act of creation altogether while a weak one permits a first creative act that then leaves the “natural” process to evolve phyla and species.

There are two schools of evolutionists: the Darwinians who deny any teleological directions in the process and the teleologists or finalists who maintain that the process manifests a guided design towards particular organic properties.

Over the centuries evolutionary thinking has swung from one position to the other and at various levels of observation.

DARWINIANS AND NEODARWINIANS

According to the late Stephen Jay Gould (in his massive documentation of his life work in evolutionary science)⁹, in Darwin’s quest for an evolutionary mechanism whose truth would be testable, he chose natural selection over all approaches that postulated either large pushes that caused jumps (saltation) in organic characteristics or purposeful directionality in change. Natural selection, by contrast, induces small gradual transformations over long periods of time, as a result of “the struggle between organisms and their (largely biotic) environment. Trial and error, one step at a time, becomes the central metaphor of Darwinism.” *Natura non facit saltum*, nature does not make a jump.

How does such gradualism, without purpose or direction, operating by trial and error, account for the full splendor of nature’s diversity? His answer was time, lots of time, aeons and aeons of time.

SOCIOBIOLOGY

In evolutionary science, Sociobiology focused on a field that had been neglected in the mainstream research of evolutionary biology. Arthur L. Caplan¹⁰ cites several reasons.

Because they have proven to be more measurable than behavior, evolutionists have long focused on the anatomy, physiology, morphology—“the ‘hard’ aspects of organic properties—in attempting to explain the processes of organic evolution and the presence of organic diversity over time,” leaving the ‘intangible’ aspects conveniently in the back burner.

Many forms of behavior particularly social behavior fly in the face of Darwinian and later twentieth century theorems which “posit some mechanisms for producing observable organic traits from particular sets of factors or genes...The essential explanatory components of modern theories about organic evolutionary processes are genes, phenotypes, genetic variation, genetic transmission, and selection.”¹¹

Darwinian theory falls short in explaining behavior and social behavior as it limits itself to its basic mechanisms in explaining evolutionary change. Complex social behaviors manifested by a large number of primitive organisms go beyond such restricted comprehension and require more leeway for explanation. Gould illustrates by citing the specialized castes of workers in many insect colonies who are made sterile in order to concentrate on specific tasks. Their ability to propagate and pass on their genes is sacrificed for the sake of the colony. Despite this, they appear in relatively stable proportions generation after generation. Such cases defy explanations hinged merely on the Darwinian mechanism.¹²

EVOLUTIONARY PARADIGM

Erwin Laszlo has traced a whole new, integral “evolutionary paradigm” running through almost every branch of science. In field after field, according to him, encompassing the developments in the different sciences dealing with the whole range of entities in the universe from the subatomic particles, waves and processes, the chemical processes, biological ontogenetic and phylogenetic movements, to the sciences of human consciousness at individual and social levels, “[t]hey recognize that the new paradigm can suggest concrete ways and means to solve many of the puzzles in their own special yet subtly interconnected discipline.”¹³

In the more recent essay cited at the beginning in which he has raised the alarm on the evolutionary crisis the world faces, he characterized the evolutionary past as driven by the human desire for Conquest that is the energizing force behind what he called “Extensive Evolution”. He advocated a shift to an “Intensive Evolution” that turns inwards towards raising consciousness in the individuals and bonding humans into Communities that live in harmony with the planet’s ecosystems.

This is a call to action – no longer atomistic, no longer purposeless, now driven by clear

objectives of achieving sustainable development.

Another book that takes its cue from the evolutionary Darwinian paradigms expounded by Jay Gould and Dawkins depicts the ideology and strategy that follows depending on the metaphysical postulates one starts with in the practice of his “scientific” quest.

Eric D. Beinhocker, senior adviser of McKinsey and Company, takes his cue from a dissatisfaction with economics expressed by John Reed when he was chairman of Citicorp which echoed through the business and many sectors of the economic world¹⁴. He responds with this reconstruction of economic theory. Transcending the heritage from Newtonian physics and positive philosophy, Beinhocker draws analogues from Evolutionary theory and the New Sciences: quantum physics, chaos theory, complexity theory, etc. and comes up with a new “chrematistics” or theory of wealth. His evolutionary analogue largely influenced by Gould and Dawkins—both *dys-teleologists*—has led to a modified version of what is essentially a Darwinian notion of competition and atomistic enterprise-centred economics. The model of chaos theory, and far-from-equilibrium modes, simply modifies market behavior and adjustment to market conditions.

David Korten’s *The Great Turning: From Empire to Earth Community*¹⁵ poses the dialectics of Empire, the power-grabbing as the dominant driving force in social evolution over the past 5,000 years and, against its antithesis, Earth Community, as the imperative dictated by sustainable development and survival for the future.

Korten draws his analogues from a vision of the evolutionary past of the cosmos, as substantiated by the developments in the New Science as well. But he takes a teleological view rather than a Darwinian. The earth, life and consciousness have emerged through a purposive force towards *sapiens* as its peak physical term. But from the emergence of the human species, social evolution is driven by a force which he does not label, but we well might, as Teilhardian noogenesis and socialization. This would coincide with Laszlo’s intensive evolution. In fact there is a strong convergence between Laszlo’s 2000 paper and Korten’s 2006 book both as regards the domination-driven past and the earth community future.

The point we are making here is that the paradigm we select in understanding the evolutionary past will determine or influence our “*theoria*” of the future. Theory, when adopted by the dominant class as justification for its interests, becomes ideology and the basis for envisioning a *Utopia*, which will be either a “*Eutopia*,” a “good place” or a “*Outopia*”, no place at all, or in a more recent coinage a “*dystopia*” (*dus-topia*, a bad place).

Literature critical of classical, neo-classical, and radical, economics, the ideology, and the strategy and policy of economic and business management based on it has reached avalanche proportions in recent years.

The critique has been generally directed at two areas: 1) The actual impact of the operation of economies based on this belief system on society and the environment as borne out by history and contemporary experience has been marked by the persistence and worsening of poverty in developed as well as developing societies and the destruction of natural resources and ecosystems, and 2) The basic postulates, assumptions and propositions of the theories themselves have failed to provide policies and strategies that work particularly in the field of sustainable development.

The literature has been more successful in the first area. There is a growing consensus and awareness even among the most rabid advocates of the theories that actual experience has not fulfilled their promised results.

It has been less successful in dealing with the precise deficiencies in the theories themselves responsible for their failure to mould policies and strategies responsive to the problems of the real world.

The Theoretical Problem

Classical economic analysis provided the scientific underpinning for this worldview. Up until as late as 1763 (with James Steuart) Economics was political economy, a manual for managing a city or a nation. In France with Richard Cantillon (1755) and then with the Physiocrats like Francois Quesnay, the idea of the economy as a self adjusting system patterned after the world of physics and astronomy, reduced to predictable and measurable scientific laws by the insights of Newton in England (April 28, 1686) began to emerge. Adam Smith pulled these threads together in his 1776 book and established the foundations for classical economics. But even the *Wealth of Nations*¹⁶ retained the character of a manual for rulers.

The concern for value and distribution among factors contributing to production became the central problematique of the science. Adam Smith had hypothesized two bases for value: scarcity and market demand for one and labour for another. David Ricardo advanced the theory that provided both an ethical basis and a natural and automatic mechanism for the valuation and distribution of both product and factor contributions to the product. He planted the seeds for two opposing schools: Karl Marx at mid 19th century and the neo-classicists of later in the century. Both schools however were classical in having the enterprise as the unit of analysis.

From this classical mainstream, scientific economics took two main directions – one leading towards the neoclassicism of the Austrian School in the last third of the 19th century, the other into the "radical schools" through John Stuart Mill, Fouriere, La Salle, Robert Owen, Karl Marx and the Fabian socialists in England. Both shared a reliance on

scientific laws that governed the operations of society and the economy. Both believed that the processes did not need so much to be "managed" as understood, and for mankind to command the events he needed merely to obey the laws that ordained their unfolding¹⁷.

This precise meaning is given by Steuart in his 1763 treatise on Political Economy¹⁸. After Newton had established, in 1686, in Physics and Astronomy the mathematical laws of motion, this mode of defining in mathematical form the precise laws that govern the universe became the scientific paradigm. The social sciences then began to seek the same kind of precision and automaticity in the workings of human society. The notion of a universe managed by a divine hand led to the idea of one guided by innate laws, an invisible hand. And so, it was thought, human society was governed by innate laws of the same kind.

Two consequences flowed from this. One, the focus of social activity shifted from the community as a natural unit to the sector-specialized organization in society. In economics, it became the enterprise, in politics, the state, the government, the political party. Two, the concern shifted from how to manage society to the scientific analysis of the laws governing its spontaneous workings. The practical problem became prediction rather than management.

The method of enterprise defined capitalism according to Max Weber's *General Economic History*.

“Capitalism is present wherever the industrial provision for the needs of a human group is carried out by the method of enterprise, irrespective of what need is involved.”¹⁹

And the mark of modern enterprise is capital accounting:

“A rational capitalistic establishment is one with capital accounting, that is, an establishment which determines its income yielding power by calculation according to the methods of modern bookkeeping and the striking of a balance.”²⁰

The 'Entrepreneur' in the Classical Schema: The actors in the schema were firms and households, not social classes. According to Joseph A. Schumpeter these actors were classified by means of turning the social groups known to common experience into the three categories of economic types (or 'functional classes'): landowners, laborers, and capitalists²¹. A fourth category or type eventually received explicit recognition, the entrepreneur – generally one who combines the factors of production into a producing organism, and has a risk-bearing function.

The firm or enterprise became the unit of economic analysis. It was essential to the mathematical model of the economy to posit the concept of a unit producing a homogeneous product and purchasing factors from owners of land, labor and capital to produce it. This made for the sort of symmetry that a mathematically determinate model of production and distribution required.

But what was convenient for analytical purposes became an exemplar of actual economic life. The enterprise became the social ideal, the model according to which the real world was to be reconfigured in order to achieve optimum allocations of resources. Thus was an atomistic philosophy, individualism, set loose into the world as a paradigm for explaining the economic world and a social ideal for the reconstruction of societies.

The development of the third world countries according to the prevailing paradigm had merely to follow the path that the industrialized countries of the world had traced in their own development. The model of this development was the Industrial Revolution that reached its break-through in England in the last quarter of the 18th century and spread to the European Continent, the U.S. and Japan through the 19th century and made possible a dramatic surge in the production and incomes of the countries that followed in England's wake.

Paul Bairoch's calculations of per capita G.N.P. in the 18th and 19th centuries show only moderate gaps in levels as between countries of Europe plus the United States on one side, and of Non-Europe on the other.

Writes Braudel: "What emerges from Paul Bairoch's calculations is that at the time when Europe was scoring dazzling triumphs all over the globe, when her ships commanded by Cook, La Perouse or Bougainville, were exploring the vastness of the Pacific Ocean, she was (unlike today) far from having reached a level of wealth vastly superior to living standards in the rest of the world."²²

In 1750, the combined economies of the developed countries of today had combined GDP in 1960 values of \$35 billion against the \$120 Billion of the rest of the world. The comparisons were in 1860 \$115 billion against \$65 billion. But after the industrial revolutions of the 1780 and early 1800s, the developed countries shot up to \$3 Trillion, three times that of the rest of the world's \$1 trillion.²³

These figures highlight the significance of the whole "Industrial Revolutions" of the 18th century in England and the 19th century in Europe, America and Japan. The revolutions brought transformations in their wake. What precisely was the character of these transformations?

A cursory view of the contemporary world provides the answer. Today, we live in a business civilization. This is the mark of the present world order. Business is the most powerful organization in the world. Its methods have come to stand for everything hard-nosed and rigorously efficient. Its methods have become the exemplar for all institutions, and "business-like" has become equated with systematic, orderly, and disciplined behavior. Its language has become currency in all of human activity that must have clear products, cater to markets, be cost-efficient, and show returns, at the bottom-line.

To appreciate the overpowering pervasiveness of that viewpoint, we must understand all the elements that enabled business to transform the world in less than two centuries. Because it has. The world as late as the end of the nineteenth century was totally

different from what it is today. The transformation was effected by a powerful idea and an awesome movement.

The idea that swept the world like a raging torrent all through the nineteenth and twentieth centuries, started from many rivulets of thought: the preponderance of individual rights and freedom over the authority and privilege of monarchs and the Newtonian vision of a mechanical universe where the laws of motion of individual particles explained the totality of material reality, converged in the 18th century into individualism, reductionist philosophy and science, crossed over to the social sciences to become classical and neoclassical economics.

This force took physical form in the real world in the industrial cities and the modern enterprise. What started as a theoretical model to explain social and economic reality and the laws of historical motion, became ideology and blueprint for remodelling society. The industrial revolution in England during the last third of the eighteenth century demonstrated to the rest of the world the power of the model. The revolution was replicated on the Continent, in America, and all the way in the Far East, in Japan in the last third of the 19th century. In our time it has been followed by the NICs and aspiring NICs.

Rapid population growth and concentration of populations in ever-larger cities accompanied industrialization in those countries. So much so that Adna Ferrin Weber, in her classic 1899 study of urbanization in the nineteenth century, could open her work with the line: "That the most remarkable social phenomenon of the present century is the concentration of population in cities is a common observation..."²⁴

The urbanization wrought by the industrial utopian vision and the free-wheeling competitive forces that drove property development and transformed natural landscapes have created metropolitan monstrosities on one hand and the waves of gentrified suburban developments against which the mounting hue and cry over the decades has just begun to have an impact in the older industrialized countries.

The pathological consequences on peoples' lives, on the circumstances of women and children, on the plight of the working classes in the wake of the rapid spread and growth of factory installations and plantation estates aroused serious questions on the wisdom of a policy that gave full free rein to individual avarice.

The marginalizing impact of the transformations within the countries of Europe is not generally appreciated. For example, between 1821 and 1932 more than 18 million people emigrated from the British Isles equal to 64% of the initial British population.²⁵ Paul Bairoch puts the growth in the level of European urbanization at 60% between 1800 and 1860.²⁶

In the mid-19th century, Karl Marx and Frederick Engel advanced the alternative vision and theory of Scientific Socialism. The world polarised around the two theories of laissez-faire capitalism on the one hand and state socialism on the other. And for the next

one hundred forty years these two theories provided the visions around which the hopes of entire nations curled. The Russian revolution in 1917 and the Chinese in 1949 provided the world with concrete examples of the Marxist alternative, and until the collapse of the Soviet regime last decade; the planet would be a combat arena between these two systems.

With the collapse of the Soviet system it seemed laissez-faire capitalism had emerged triumphant and its policy and strategy justified to be right for the planet.

A force that has wrought the spectacular transformations of the last two and half centuries cannot be simply rejected. It then becomes terribly important to understand precisely where the theory has gone wrong.

How has it operated through history spawning at one and the same time unbelievable growth and elevation of lifestyles and massive marginalization and widespread "immiseration" to use a Marxist term?

This result in fact is what would be expected from a system whose dynamic force springs from individual persons and organizations picking out from the range of needs in every society only those that yield the most attractive gains, the way an opportunist miner picks from an ore body only those with the highest assay. The effect is to leave beyond economic recovery the "low-grade ore". In societies, the result is to leave beyond feasible servicing the needs that are far more vital and imperative for the mass of the population – health, education, environmental preservation, care for the poor and the handicapped. The result is evident precisely in the polarisation of humanity into a minority enjoying unprecedented opulence and a large majority faced increasingly with unmanageable problems.

In all transformation an old reality recedes as a new reality emerges. What receded in the transformations of the past two centuries was human community. Enterprise and the state took primacy of place and the company town, impersonal city, metropolis and megalopolis displaced human-scale communities.

TEILHARD'S VISIONS OF PAST AND FUTURE

The point of the study is to seek directions for the future management of the planet towards sustainable development – the continuous meso-evolution and the formation of a *eutopian* or an "*oikotopian*" vision of sustainable settlements.

Since the evolutionary process combines chance with purpose and unfolds towards the development of different phyla, in noogenesis the process continues similarly in formulations of theories that develop into ideologies and *Utopias* some of which may end up as *Outopias* that become extinct, *dystopias*, that create problems or *eutopias* that breed societies that harmonize with their habitats. It is this process we pursue at the meso-evolutionary level of observation in order to arrive at a deeper insight into the problems

of non-sustainable development.

The Teilhardian paradigm uses human consciousness as the primary analogue and metaphor for explaining the trajectories of evolutionary transformation. The probing thrusts of phylogenesis and speciation operates to favor organisms manifesting greater complexity-consciousness until the phylogenetic process evolves the human species with the capacity for “reflection” and “conspiration” – the abilities to invent tools and artefacts and to bond into communities and organize for specific life purposes.

If we follow the evolutionary thrust into the future taking a meso-evolutionary perspective, the next question is: what is the appropriate unit of evolution, as between the atomized individual and the phyletic groups? Our perception is that there is a scale of observation that is appropriate for understanding the phenomenon of human development and its ecological, economic and social sustainability. And that perhaps the pathology that afflicts humanity and the planet may have arisen because noogenesis and human socialization somehow took a turn towards forms that have not led to sustainable modes. An examination of the evolutionary record following the Teilhardian paradigm of using the highest form achieved as the primary analogue for understanding the transformations at lower (less complex, less conscious) levels.

A meso-evolutionary perspective would look for the natural colonies of organisms and the modalities by which such collectives organize themselves to achieve symbiosis with other groupings and engage harmoniously with the habitats they form on their share of the planet.

At the highest levels in human socialization we have the Greek concept of the *polis* or the *polisma*, the *communitates*, which assume the physical forms of the *urbes*, the cities or more generically, the human settlement.

In nature, the different genera and phyla of living species form groupings that are organized so they assume the character of single organisms, from plants and trees in rainforests to colonies of micro-organisms to reptiles, birds, insects – beehives, ants’ nests, prides of lions, wolf packs, etc. Different phyla achieve biological balance in common habitats that has been labelled “symbiosis.” Studies of how such colonies of living organisms belonging to a wide range of families, classes, genera and species have revealed an amazing network of cooperative symbiosis more than destructive atomistic competition.

Edward Wilson has integrated the extensive and intensive research on the social groupings of biological species and found that in all organisms from colonial jellyfish to man, “social systems have originated repeatedly in one major group of organisms after another.”²⁷ He found that four groups occupy the pinnacles of social organization above all the others: the colonial invertebrates, the social insects, the nonhuman mammals, and man.

His findings confronted him with a paradox. “More primitive and older forms of life”

show more “advanced” forms of social organization. As you go from simpler and older forms to more elaborate body forms, “the key properties of social existence, including cohesiveness, altruism, and cooperativeness, decline.”²⁸

The colonial invertebrates, including the corals, the jellyfish-like *siphonophores*, and the *bryozoans*, have come close to producing perfect societies. The individual members, or *zooids* as they are called, are in many cases subordinated to the colony as a whole – not just in function but more literally, through close and fully interdependent physical union. So extreme is the specialization of its members, and so thorough their assembly into physical wholes, that the colony can equally be called an organism. In other words, the individual zooid practically loses its separate identity and merges perfectly into the collective.²⁹

Wilson then goes into a fascinating description of the social structure and functions of the colonies of higher social insects (*Hymenoptera*) such as ants, termites, and certain wasps and bees that form societies that are much less than perfect. While they are marked by differentiation of specialized castes performing different functions, and manifest greater signs of altruistic behavior in favor of the queen and the colony as a whole, there occur low-keyed struggle, conflicts, etc.

Among the vertebrates, there is an escalation of aggressiveness and discord, more selfishness and less altruistic behavior (individual sacrificing for the collective).

The clear pattern is: as the individual becomes more complex, conscious and “free” sociality and coloniality become more problematic and the formation of a cohesive and harmonious organization becomes equally less simple and straightforward. This pattern goes all the way up to human society where the reconciliation of individual with social “good” becomes the most complicated, more demanding of voluntary selflessness and altruism. Indeed if we follow the positive correlation between complexity/consciousness of the zooids and the accentuation of individuality, selfishness and aggressiveness, when evolution of the collective arrives at its pinnacle in human society, the force required to reconcile individual freedom with the social good and symbiosis with all of nature – the extrapolation points to a force that cannot be less than a conscious and deliberate effort to transcend these 'laws' or path of evolution that may largely flow from genetic and phyletic heritage towards those heights of consciousness, and we must add, spirituality, in which alone the duality of self and otherness fades into a ‘communal’ unity.

The evolution of these “colonial settlements” towards the increasing complexities of micro-, meso- and macro-ecosystems shows increasing complexities of communications networks, and functional differentiation defining hierarchies analogous to class differentiations in human societies.

If we then track the evolution of human societies in history and attempt to understand the parallel trajectories of movement of ideas, theories, ideologies and utopian visions that have informed and determined the formation of human societies, their cultures and their institutions, and test them against the norms of sustainability deducible from a study of

the meso-evolutionary patterns of ecological colonies, we might gain an insight into the roots of the non-sustainability of human development.

As mentioned above, all this paper merely attempts is a seminal laying out of a research agenda to apply the Teilhardian paradigm to the evolutionary process taking a level of observation somewhere between micro-evolution and its atomistic perspective and the macro-evolution that focuses on the genesis of biological phyla.

It remains now simply to indicate how such a quest might produce insights that will indicate how the problem of development sustainability might be understood and managed.

The scientific revolution represented by the Teilhardian paradigm shift in a phenomenological theory of evolution provides a good starting point. We take as “normal science” in Kuhn’s terms, the Darwinian paradigm and its hard core propositions.³⁰

PULLING THE THEMES TOGETHER

The most critical consideration in coming to terms with sustainable development is the selection of the appropriate unit of analysis and management, and the scale of observation. Sustainability encompasses the three elements of social equity, economic sustainability and ecological integrity. But it can be neither understood at a scale of observation that simply views each of these aspects separately in actual society or at a global in which the details of day to day operationality are obscured.

But what is the unit of observation and management at which sustainable development can be achieved: is it the planet as a whole, the nation states, the individual person or organization? The ruling world order considers the business enterprises and the nation state as the key units of analysis and management. And this presents the problem because the business firm as a unit of organization does not incorporate the ecosystem. The nation state is not a meaningful unit of micro-management.

Darwinian evolutionary theory takes the atomistic organisms as the micro-unit and the phylum as the macro-unit. This article has suggested a meso-perspective that centers on the community defined to encompass the “colonies” of living organism on their territorial ecosystem as shared habitat.

This unit had not figured in mainstream evolutionary science until Edward O. Wilson’s launching of his Sociobiological “Synthesis”. He focused on the social structure and behavior of living organisms analyzing their place in the evolutionary process according to the Darwinian scientific paradigm. This meant confining explanatory hypotheses to purely mechanistic processes operating without an end purpose, in purely random phylogenetic thrusts, and explaining social behavior patterns and their spread in space and over time as originating from genetic endowments.

Wilson saw Sociobiology as the link between evolutionary biology and social science. But using this mechanistic paradigm to explain human social behavior, social and political institutions and culture patterns was widely interpreted in both the circles of natural and social science and in activist groups as a deterministic justification for such odious *isms* as racism, totalitarianism and masculinism. Criticism came from fellow evolutionary scientists such as Jay Gould as well as from human rights and feminist organizations.

Even before Sociobiology, the Darwinian paradigm had been a model for classical laissez faire economics that originated with Adam Smith and David Ricardo as well as the evolutionary economics of Karl Marx. The two contending ideologies of the 19th and early twentieth centuries then traced theoretical links to Darwinian evolutionary theory.

In both systems the units of analysis and management were atomized individuals and production organizations, not communities in the sense we defined. In practice and historical experience, the lifestyles and urban systems of both regimes have been ecologically disastrous. The capitalist models of profit maximizing enterprises and unbridled free markets have marginalized peoples of the Third World, and appropriated for the rich industrial countries 80 % of the planet's natural resources so a small 20% could enjoy the unprecedented wealth that economic power enabled them to achieve.

This paper sought insights from evolutionary science to provide deeper understanding and guidelines for managing. Far from helping, the mainstream Darwinian paradigm has been the model and inspiration for the theory and ideology that has brought evolution of human society to our present crisis.

The problem really lies in the metaphysical assumptions of positive science that exclude from analytical consideration any final purpose. Theoretical analysis of the fossil and physical data has sought purely mechanical processes to explain the transformations over the millennia and over the surface of the planet evidenced by the data. As scientific methods improved and sharpened the tools of observation, measurement and experimentation and as geology and palaeontology increased the store of fossil specimens, science felt that it understood the physical processes. More recently with the tremendous expansion of and access to computer power, evolutionary scientists have succeeded in designing programs that seem capable of generating "spontaneously" and by random repetitions the physical forms that organisms have taken. The transformation of the stuff of the earth from the simplest material particles to the most complex living organisms up to and including the human species could be explained by these.

As positive science gained increasing confidence it was understanding the how of evolution so it assured itself it did not need to understand why and by whom?

Chemical science has not succeeded in generating life out of pure chemical reactions in the laboratory nor ever observed it happen through spontaneous natural forces. Still evolutionists believe permutations over billions of years probably struck on the combination out of which mega-molecules turned into living cells, living cells

spontaneously constructed living organisms of ever greater complexity, feeling, and mobility one of which was the human species.

The Teilhardian vision of the past put forward an inversion of viewpoints. The Darwinians try to explain the evolution of life and consciousness by the mechanistic processes of physics and chemistry. Teilhard uses consciousness as the analogy to explain the teleological directions of physics, chemistry and life.

Darwinians confined their analysis to the *without* of things. Teilhard insisted that you needed to explain the *within*.

Darwinians had assumed away purpose and meaning in the process. Teilhard's interpretation argued that the physical evidence could not be explained without imputing a grand design that allowed much spontaneity and wide ranging probes in its execution but clearly trended towards organisms of progressively greater complexity and with complexity, greater consciousness, until the process peaked in the evolution of humans with their capacity for reflection and conspiracy.

Explaining the process with degrees of complexity and consciousness as the primary analogue establishes according to Teilhard an explanatory taxonomy that encompasses the material universe and all its inhabitants into a unified system. Whereas the Darwinian Theory would have made humans unique and outside the explanatory hypothesis.

The extension of the Darwinian Theory to Sociobiology shifts the focus from the individual organism, the zoid, to the collective to highlight the social behavior of organisms in the process of evolution and study the formation of colonies in their habitats. It therefore takes the view that is relevant to the question of the unit of analysis and management that is most appropriate for addressing sustainable development.

But the mechanistic paradigm and the factoring out of purpose precisely reinforces the mindless drive for growth that has brought humanity to this critical impasse. The inversion represented by the Teilhardian paradigm transforms Sociobiology and makes it a source of powerful insights.

The methodological question for this paper: Where do we come out if, instead of using the Darwinian paradigm in analyzing the facts brought out by Sociobiology, we analyzed them with the Teilhardian paradigm of using the highest form of human society we can visualize as the analogue for the lower forms of sociality? Will this be more productive of insights for our chosen problematique: sustainable development?

A *Eutopian* vision of the sustainable society defined in our terms as a unit community – colony and habitat symbiotically linked and sustained by a consciousness among the inhabitants that encompasses and bonds individuals to one another and the collective to the earth, can become an analogue for the modes of sociality and coloniality of the non-human phyla.

In this perspective, the perfect social structure is achieved because the zooids or individuals have minimal consciousness and the process of organization is more mechanical. As we move to more complex and conscious zooids and they become more individualized (*personalized?*) the organizing process becomes more dependent on consciousness rather than blind mechanical forces genetically encoded. Is it then fair to surmise that also in the matter of phenotypical and genotypical characteristics, that as we move up towards greater complexity and consciousness, the organism becomes more susceptible to social environmental influence and therefore acquires more phenotypical properties and proportionately less genotypical?

The correlation between complexity/consciousness and totalitarian/liberal character of their colonies establishes a significant trend line. The points of the trend line below human society go from the invertebrate zooids and their “totalitarian” colonies to the greater complexity and individuality of the higher insects and the vertebrates and the increasing degrees of “liberalism” in their colonial organizations.

At the peak are humans with the largest degree of freedom from genetically constrained capacities, and the largest scope for bonding by deliberate consciousness. But human societies are faced with the greatest challenge of establishing the balance between individual freedom and social order at a point that also respects symbiosis with the rest of nature. When this balance is achieved then human society has also found the path of sustainable development.

The extrapolation of this trendline into the future opens up fascinating scenarios. The elements of increasing complexity and consciousness lead to higher levels of “personalization” and individuality. The collectivization or colonial formation – *socialization*, to use Teilhard’s term – identifies with the present quest for human and planetary survival and more than that for the fulfilment of the true human destiny and the building of the City of God.

This analytical procedure can prove more fruitful for our sustainability problem. Development then as a shorter period phase in the long trajectory of evolution becomes for the human species a deliberately managed process which transcends the social forms of less conscious organisms but in transcending must carry forward certain characteristics of the lower colonial forms. I suggest this would be primarily the capacity for symbiotic cohabitation with the rest of nature in the territory and ecosystem that represents their common habitat.

Does this not say then that the problem of unsustainable development (meaning transformation) of human society arises precisely from our misreading of the lessons of nature: using human intelligence to ape the physical mechanisms at work in the lowest ranges of evolution in organizing and managing the modalities of human colonization of its habitat? Instead, should we not visualize in the future the ideal community as a colony symbiotic with all the other colonies of living organisms in its network of villages, towns and cities designed to sustain lifestyles that are in harmony with their territorial ecosystems?

There is a basis for sharing Teilhard's optimism. Already there are signs of a realization that neo-classical capitalism and its monster cities are a false thrust in evolution: the modern machines and the mega-cities and their suburban appendages are dinosaurs in human social evolution. In the *within* of humans, higher consciousness and spirituality rather than mere self-serving rationality are the prerequisites of evolutionary progress. In the *without*, the dematerialization of lifestyles has begun to be a goal for increasing numbers. Computer and communications technology has opened up horizons for community-scale systems of production. And in the realm of habitat development, the "New Urbanism" has turned design back to modules that honor all the elements of sustainability: social equity and ecological symbiosis without sacrificing economic viability.

The times call for a retransformation to restore community back to its rightful place in the center of the process. They demand no less than a new set of postulates of strategy, policy and technology.

The ruling order is founded on the philosophy of individualism.

The new order must be based on the idea that the individual is fulfilled in harmony with the whole of creation – in a community bonded by Love with his own and other living species and through a mode that uses inanimate nature sustainably.

The ruling science is reductionist.

The new science must be holistic and systemic – based on the principle that the whole is greater than the sum of its parts, that non-equilibrium states are the rule rather than the exception, that paths of evolution are nonreversible over time, and the emergence of life and human consciousness means that organic processes and human management predominate over mechanistic forces in the continuing process of evolution, and that therefore, this is a moral and not a mechanical universe.

The new technology must emerge out of the combined revision of consumer lifestyles that consciously evaluate the specifications of need-satisfiers with the nature of fundamental human needs to achieve more sustainable consumption baskets and production engineering designs that ape nature's production modes, balancing the direct transformation of the flow of the sun's energy with the production processes using the direct products of that transformation and generating "wastes" that feed further production processes.

These transformations emerge out of reflections on the Teilhardian visions of our evolutionary past and our future thrust towards a community ruled by Love incarnate, Christ-Omega: *l'amor che move il sole e l'altre stelle*. ("the Love that moves the sun and the other stars.")³¹

NOTES

¹1. Edward O. Wilson, *The Diversity of Life* (Cambridge, Mass.: The Belknap Press of Harvard University, 1992), 15.

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2. Erwin Laszlo, "Human Evolution in the Third Millennium", *Futures* 33:7 (2001), 649.

³3. In fact Darwin's model of the evolutionary process was strongly influenced by Adam Smith. Smith's *Wealth of Nations* appeared in 1776. Darwin while preparing his *Origins of the Species* was intrigued by the mechanism of competitive selection that Smith used as a mechanism for demonstrating that a process of free market competition in which satisfaction-maximizing individuals and profit-maximizing business men fiercely competed to serve their own individual gains would result in the best products and producers emerging as survivors while the worst would fall by the wayside. In Darwin this became the process of natural selection in which the fittest survived and the unfit became extinct.

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4. Stephen Jay Gould and Eldredge advanced the concept of "Punctuated Equilibrium" to "explain" this pattern in the fossil record. See Gould, *The Structure of Evolutionary Theory*, (2006), 774-781.

⁵5. Friedrich W.J. von Schelling, "Werke", edited by Manfred Schroter (Munich: Beck, 1958-59) 3:299, in Jurgen Habermas, *Knowledge and Human Interest*, translated by Jeremy J. Shapiro (Boston: Beacon Press, 1971), 301.

⁶6. "In his form, theory already presupposed the demarcation between Being and time that is the foundation of ontology. This separation is first found in the poem of Parmenides and returns in Plato's *Timaeus*. It reserves to *logos* a realm of Being purged of inconstancy and uncertainty, and leaves to *doxa* the realm of the mutable and perishable. When the philosopher views the immortal order, he cannot help bringing himself into accord with the proportions of the cosmos and reproducing them internally. He manifests these proportions, which he sees in the motions of nature and the harmonic series of music, within himself, he forms himself through mimesis. Through the self's likening itself to the ordered motion of the cosmos, theory enters the conduct of life. In ethos, theory molds life to its form and is reflected in the conduct of those who subject themselves to its discipline." (Habermas, 301-302).

⁷7. In *The Structure of Scientific Revolutions*, Thomas Kuhn elaborates, "each of the corresponding schools derived strength from its relation to some particular metaphysic, and each emphasized, as paradigmatic observations, the particular cluster of optical phenomena that its own theory could do most to explain." (Chicago: University of Chicago Press, 1970), 12-13.

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8. See Robert J. S. J. O'Connell, S.J.'s reference to the more sympathetic reception Teilhard's works received from Theodosius Dobzhansky, who had "written kindly about Teilhard's synthesis; perhaps the continental-European tendency to be more sympathetic to the *geistliche* forms of *Wissenschaft* made him more sympathetic to the blend of science, poetry, metaphysics, and mysticism which he claims to have found there." This as against the rough criticisms of the Anglo-Saxon scientists. Teilhard's *Vision of the Past: The Making of a Method* (New York: Fordham University Press, 1966), 1-2.

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9. Stephen Jay Gould, *The Structure of Evolutionary Theory*. Cambridge, Mass and London, The Belknap Press of Harvard University Press, 2006, pp, 93-84

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10. Arthur L. Caplan, *The Sociobiology Debate: Reading on Ethics and Scientific Issues* (New York: Harper & Row, 1978), 3-5.

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11. Caplan, 4

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12. “But behavior and social behavior defy explanation in those terms. “Even discounting the confusing behavioral displays and traits of humans and other mammals, a large number of relatively primitive organisms manifest complex social behaviors that are *prima facie* refutations of the adequacy of these basic mechanisms to explain evolutionary change. Many insect species possess specialized castes of workers which are completely sterile. Yet these castes appear in relatively stable proportions from one generation to the next actively performing their various tasks of defence, food gathering, nest construction and day care for juveniles.” Caplan, 4

¹³13. Erwin Laszlo, *Evolution: The Grand Synthesis* (Boston, Mass.: New Science Library), 10.

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14. Eric D. Beinhocker, *The Origin of Wealth: Evolution, Complexity, and the Radical Remaking of Economics* (Boston: Harvard Business School Press, 2006).

¹⁵15. David Korten, *The Great Turning: From Empire to Earth Community* (Bloomfield: Kumerian Press, 2006).

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16. Adam Smith, *An inquiry into the nature and causes of the wealth of nations, volume 1* (London: Methuen & Co. Ltd., 1961).

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17. In fact, the term economics itself comes from the Greek word *oikonomos*, which meant "household manager", a professional household steward who was hired by the oikodespotes, the household head or lord to manage the affairs of the his household.

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18. James Steuart, “An Inquiry into the Principles of Political Economy” in *The Works of Sir James Steuart* volume 1 (New York: Augustus M. Kelley, 1967).

¹⁹19. Max Weber, *General Economic History* (Glencoe, Illinois: The Free Press, 1950).

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20. Weber, ---

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21. Joseph Schumpeter, *The History of Economic Analysis* (London: George Allen and Unwin, Ltd., 1954), 554-556.

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22. Fernand Braudel, “The Perspective of the World,” in *Civilization and Capitalism 15th to 18th Century*, volume 3 (New York: Harper & Row, 1984), 534.

²³23. The 1976 figures in Braudel are cited as \$3,000 million and \$1,000 million which are obviously misprints for trillion. Braudel, 534.

²⁴24. Adna Ferrin Weber, *The Growth of Cities in the Nineteenth Century: A Study in Statistics*, First Published 1899, (reprinting Ithaca, New York: Cornell University Press, 1965).

²⁵25. J. C. Chesnais, *The Demographic Transition* (New York: Clarendon Press, 1992), cited by Mario Giampietro and Sandra Bukkens, "The Energetics of the Demographic Transition", *Ms*, September 17, 1993.

²⁶26. Paul Bairoch, *Cities and Economic Development: From the Dawn of History to the Present* (Chicago: The University of Chicago Press, 1988), 216.

²⁷27. Edward O. Wilson, *Sociobiology: The New Synthesis* (Cambridge, Mass.: The Belknap Press

of Harvard University Press): 379-382.

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28. Wilson, 379.

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29. Wilson, 379.

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30. The term "hard core" is not Kuhn's but Imre Lakatos and his alternative approach to defining scientific schools or theories. See Maurice Blaug, "Kuhn versus Lakatos or Paradigms versus research programmes in the history of economics," in Spiro Latsis, editor, *Method and Appraisal in Economics* (Cambridge University Press, 1976). His system of classification of scientific theories differs from Kuhn's concept of "paradigm" which he criticized for relying on single propositions instead of a whole family of propositions. His classification he calls Methodology of Scientific Research Programs (MSRP) defines scientific systems in terms of layers of propositions of which the innermost is the "Hard Core." Around them are propositions he calls "Positive Heuristic" and "Protective Belt." So the process of Popper's falsification becomes a more complex procedure. See. For example, Spiro Latsis's chapter, pp. 14-23.

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31. Dante Alighieri, *Divina Comedia: Paradiso*, Canto xxxiii, l 145.

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