SESSION SEVEN

Approaches to Peace in the Context of Human Evolution

An Evolutionary Approach to World Peace

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Abstract

Humankind is currently at a critical juncture in its evolutionary history. Qualities and attributes which favored survival and evolution in earlier phases of our history may be counterproductive today in the face of the marked growth in world population in modern times. War and conflicts stem from the persistence of an emphasis on value systems that may no longer be optimal for human survival and evolution. The emergence of an increasing emphasis on values of cooperation and mutualism appears necessary to ensure our continued survival and evolution as a species in the context of the new challenges which confront us, as well as the establishment and maintenance of peace in the world. An evolutionary approach provides a perspective from which to consider the current human situation and steps which might be taken to promote our further survival and evolution and to bring about world peace. In this metabiological phase of evolution, as distinct from the prebiological and biological phases, the degree to which consciousness can be understood and developed may be of central importance in determining the future trajectory of evolution and our ability to develop the conditions which will support a lasting world peace.

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We are confronted with a paradoxical situation when considering why humankind has not so far experienced lasting peace in the world. Our species possesses traits and characteristics that seemingly should be able to provide a basis for world peace, such as generosity, respect for the rights of others, cooperation, and concern for nature and the environment. However, we also possess traits which stand in the way of our realizing peace on any scale, from individual to domestic to national and international, including selfishness, lack of respect for the rights of others, competition, and the desire to expand our own sphere of life at the expense of both others and the environment. It appears as though which of these sets of traits emerges as dominant in our collective lives will determine to what extent world peace can become a reality, as well as our ability to survive and evolve as a species on this planet. The practical question we face is whether there is anything we can do to influence the processes which determine the relative dominance of the expressions of these sets of characteristics. This paper will present an evolutionary perspective from which to consider approaches to answering this question.

Human Qualities and World Peace

Over the course of its evolutionary history, humankind has faced numerous obstacles to its survival. Early on, the problems of greatest importance were those concerned with our relationship with the natural environment: our ability to secure adequate supplies of food, energy, and water; to provide clothing and shelter; to control disease. Over time, we have accumulated knowledge and developed technologies which, if adequately applied, appear capable of dealing with these major categories of problems. Nevertheless, in spite of this accumulated knowledge, humankind continues to suffer not only from material shortages but also from the unhappiness caused by interhuman conflicts—our relationship with our own kind. Indeed, our inability to relate optimally with each other appears to be largely responsible for the continued problems we face with respect to establishing a fully rewarding and harmonious relationship with our environment.

Based on this viewpoint, it would appear that the major problems with which we, as a species, are confronted today are primarily related to the workings of our minds. What appears to be lacking in our lives today is not so much the specific aspects of knowledge capable of satisfying particular needs, but rather the wisdom required to utilize our knowledge appropriately—to make the appropriate choices and decisions that would lead to happiness and fulfillment on all levels for all people, without the waste, destruction, and loss of both life and quality of life which follow choices made less wisely.

Dr. Nanda has pointed out that we are living in a new era, and that a new era demands new thinking (please refer to Nanda's article in this issue). Indeed, styles of thinking and acting that may have been necessary for survival at earlier stages of our evolutionary process may now represent the major impediment to progress towards peace and prosperity in the context of our rapidly expanding human population. In order to understand what steps we might take to develop, as Dr. Nanda put it, an "enlightened self-interest," and increase the extent to which wisdom can be applied in the handling of world affairs, it may be useful to consider our present circumstances from an evolutionary perspective.

An Evolutionary Perspective

Three Phases of Evolution

Evolution can be considered in three phases (Figure 1). The *prebiological phase* includes the evolution of matter from the time of its appearance at the "big bang" in the form of fundamental particles, through the coalescence of these particles into atoms, and then atoms into molecules; to the aggregation of these atoms and molecules into stars, planets, solar systems, and galaxies; and then the further evolution of forms and structure of matter within these larger systems.

The *biological phase* (which is what one usually considers on hearing the word "evolution") consists of the evolution of the more complex forms of matter and energy associated with living systems that have the capacity of self-replication, from clusters of self-replicating molecules, through single-celled organisms, through multicellular organisms (all the diverse forms of plant and animal life, both past and present), and ultimately (from our point of view) to human organisms.

But evolution as we know it did not stop with the appearance of human forms. Evolution has continued in a third phase, which might be called *metabiological evolution,* consisting of the continued development of the human mind and products of the human mind, both individually and collectively, in the form of all of the rich and diverse aspects of society and culture as expressed in the accumulated wealth of art, music, literature, scientific knowledge, social relationships, religions, and political systems. The present environment on earth (indeed, in the cosmos) represents, therefore, not only the products of the prebiological and biological phases of evolution, but also

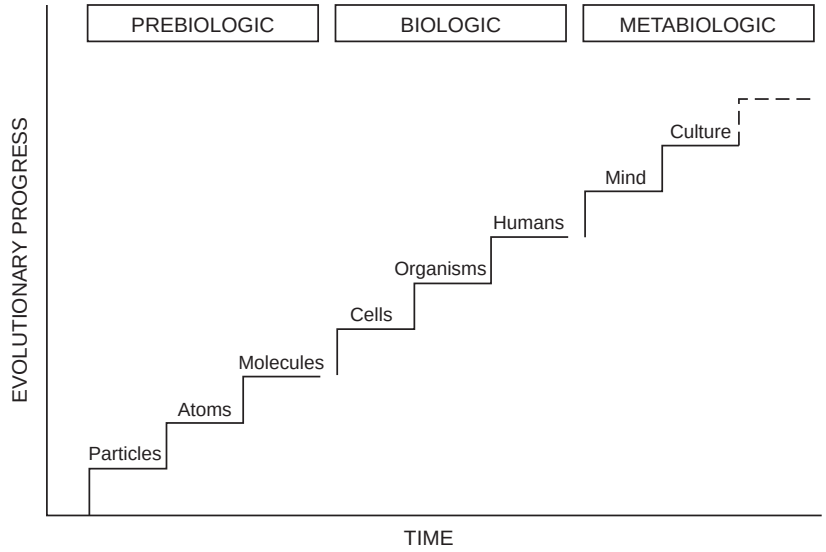

Figure 1. The three phases of evolution.[1]

[1]Adapted from J. Salk. (1983). *Anatomy of Reality: Merging of Intuition and Reason.* New York: Columbia University Press.

human thoughts and the products of human thinking.

It may be imagined that the evolutionary process has not reached an end in our present times, but that humanity has further steps to take in its evolutionary history. It would seem that these further steps may not involve the acquisition of new physical characteristics (biological evolution), but rather new ways of thinking and behaving (metabiological evolution) that will enhance our capacity to cooperate and survive in a world which is currently threatened by the destructive potential created by our species in the course of its evolution to its present stage.

Steps in Evolution

The necessity to evolve in order to survive characterizes the course of evolution in the biological realm (Figure 2). At each step in the evolution of a particular type of organism, a repertoire of characteristics has been accumulated (encoded in the DNA) as a result of its past history, sufficient to give the organism the capacity to survive under the existing circumstances in its present ecological niche (as represented by the phases labeled "a" on the curve). As time goes on, circumstances change (changes in climate, appearance of new predators, increased competition from other species, etc.) in such a way as to threaten the survival of the organisms in their present form (as represented by the arrows in the figure). If the species of organism has the capacity to "acquire" new characteristics that will permit survival under the new set of circumstances (through the natural selection of those members of the species which have the requisite characteristics coded for in their genomes, either carried over from past evolutionary history or

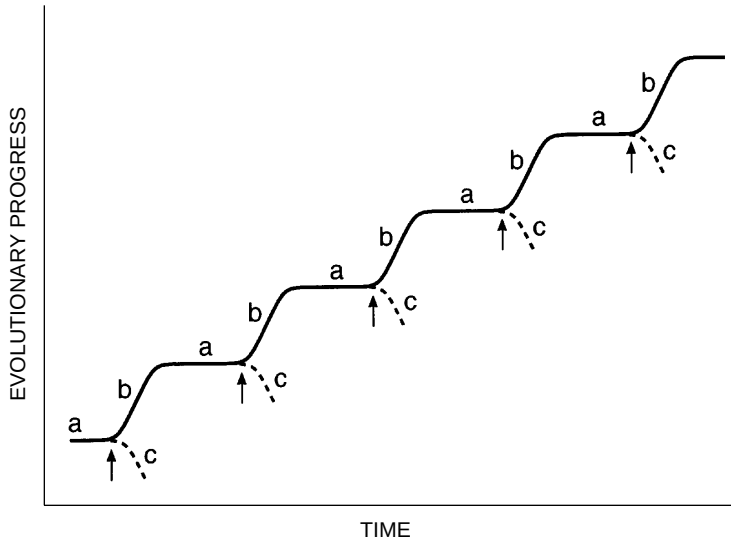

Figure 2. Steps in evolution.[2]

[2]Adapted from J. Salk. (1973). *The Survival of the Wisest.* New York: Harper & Row.

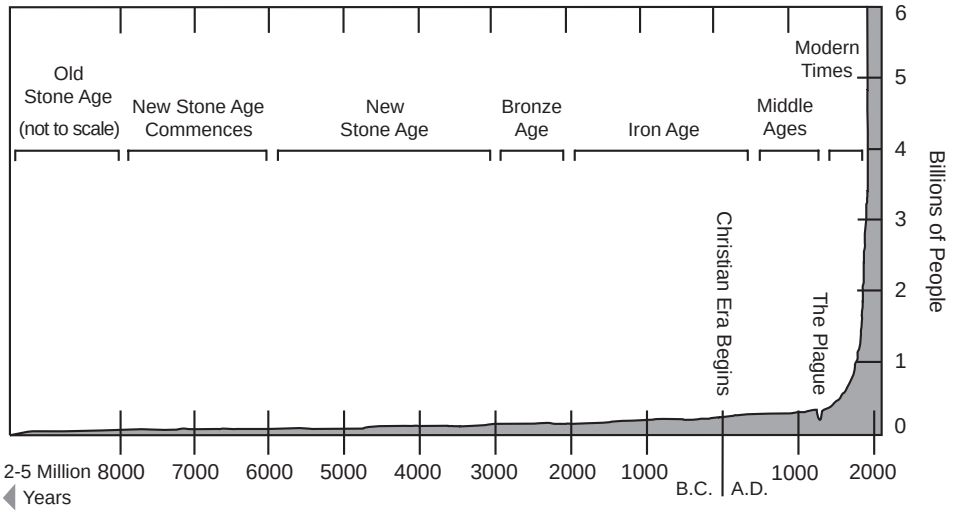

Figure 3. World population growth through history.[3]

present as a result of new mutational events), then the organisms will take a further evolutionary step (as represented by the phases labeled "b" on the curve) and continue to thrive (throughout a new phase "a") until some new challenge to survival appears. If at any time the species is not capable of taking a next evolutionary step in the face of some new challenge (i.e., does not have inherent within its genome characteristics required for survival under the new circumstances), then the individuals of that species will die out, and the species as a whole will cease to exist (as represented by the phases labeled "c" on the curve).

We currently find ourselves in a position where our continued survival is being challenged, and where we must take another step in our evolution in order to survive.

Our Current Evolutionary Challenge

World Population Growth

The current evolutionary challenge which confronts us is emphasized by a consideration of the explosive growth in world population which has occurred over the past several centuries as a result of the accumulated knowledge and technologies which have allowed us to overcome many of the restraints to growth imposed by factors in the environment (Figure 3).

If the current population growth rate is projected into the future, three possible types

[3]From J. Salk & J. Salk. (1981). *World Population and Human Values: A New Reality.* New York: Harper & Row. (As adapted from J. van der Tak, C. Haub, & E. Murphy. (1979). Our population predicament: A new look. *Population Bulletin, 34*(5), 1–48.)

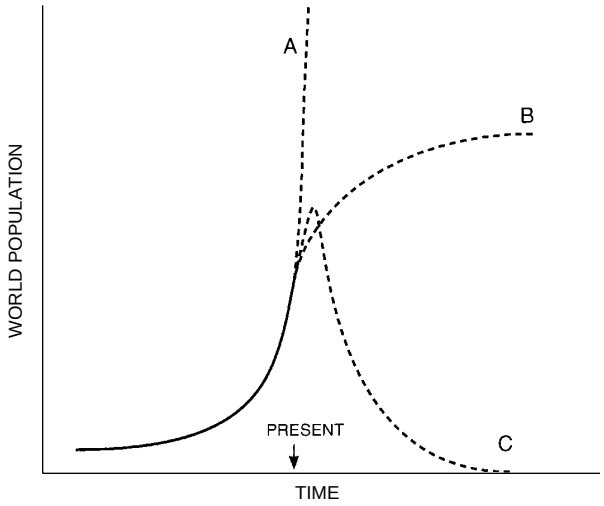

Figure 4. Possible future trajectories of world population growth.[4]

of trajectories might be foreseen (Figure 4). Trajectory A is not possible, to the extent that our species is constrained to living on a finite planet with finite resources that ultimately will set a limit on the number of lives that can be supported. Trajectory C is possible, although clearly (from our point of view) undesirable: it is conceivable that the population would reach a level at some future time where competition for resources (or some other factor) could unleash destructive forces that would lead to the elimination of our species. Ideally, the course we might hope to follow would be that illustrated as Trajectory B, where the rate of population growth slows over time and ultimately stabilizes at a level sustainable by the resources of the planet and its inhabitants.

Population growth curves similar to both Trajectory B and Trajectory C are seen in nature. What factors will determine which type of curve we will follow in our own future history, and what actions might we take to increase the likelihood of following Trajectory B rather than Trajectory C?

Epoch A and Epoch B

To gain further insight into these questions, it may be helpful to examine some of the forces and characteristics associated with the different portions of S-shaped, or sigmoid, growth curves similar to Trajectory B (Figure 5). Such curves can be divided into two portions: an upward-curving portion (Epoch A) and a downward-curving portion (Epoch B). A critical point in the curve is the point of inflection, where the direction of curvature changes from upward to downward (as represented by a gap in the figure).

The two portions of the growth curve are markedly different in character: Epoch A

[4]Adapted from J. Salk & J. Salk. (1981). *World Population and Human Values: A New Reality.* New York: Harper & Row.

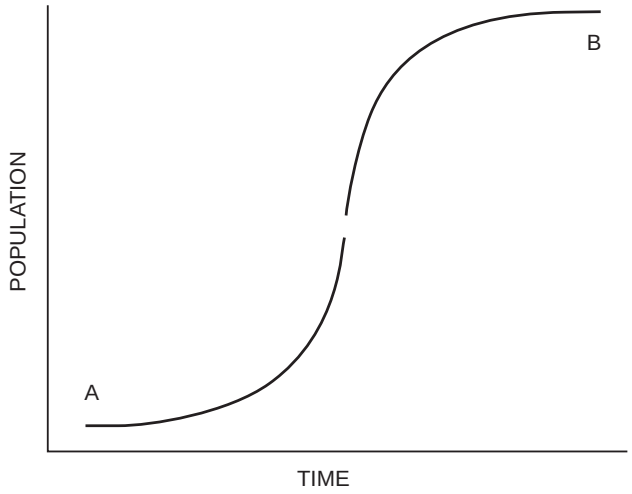

Figure 5. Two portions of the sigmoid growth curve: Epoch A and Epoch B.[5]

is characterized by an ever-increasing rate of growth, and Epoch B by an ever-decreasing rate of growth until a plateau is reached where the population stabilizes at a constant level. What forces or dynamics within a population promote the different shapes of the two portions of the curve?

During Epoch A the prevailing forces and values are directed towards promoting an increase in quantity, in terms of both the number of individuals and also the quantity of materials that must be made available to support the increasing number of lives. During Epoch B the prevailing forces and values are directed towards promoting a stabilization of quantity in terms of both lives and the materials required for their support.

In the case of human society, different values and attitudes might be expected to be associated with the two portions of the population curve (Figure 6). In Epoch A, the prevailing values would be directed towards an increase in quantity, with a focus on overcoming external restraints that limit growth, and on controlling disease and death. Life would be characterized to a large degree by competition in order to survive, with a predominant attitude of selfism with respect to one's own self, family, community, or nation. In Epoch B, the emphasis on quantity would diminish and be replaced by an emphasis on quality, with a focus on increasing the positive (in contrast to reducing the negative), as reflected in increased attention to improving health and the quality of life. The imposition of self-restraints, including birth control, would assume a more important role, and social interactions would be expected to be characterized increasingly by cooperation and mutualism in the context of the expanded sphere of society (i.e., the entirety of the population) which one would have to consider of personal value for one's

[5]Adapted from J. Salk. (1973). *The Survival of the Wisest.* New York: Harper & Row.

EPOCH A	EPOCH B
QUANTITY	QUALITY
ANTIDISEASE	PROHEALTH
ANTIDEATH	PROLIFE
DEATH CONTROL	BIRTH CONTROL
OVERCOME EXTERNAL RESTRAINTS	IMPOSE SELF-RESTRAINTS
COMPETITION	COOPERATION
SELFISM	MUTUALISM

Figure 6. Values and attitudes associated with Epoch A and Epoch B.[6]

own survival and enjoyment of life.

It is clear from an examination of the sigmoid curve in Figure 5 that there is a gradual, rather than an abrupt, transition from one portion of the curve to the other. Clearly, the values and attitudes associated with Epoch A of the curve will not suddenly disappear and be replaced by those associated with Epoch B, and the values and attitudes associated with Epoch B are not, and have not been, absent in Epoch A. However, if we are to be successful in making the transition from Epoch A to Epoch B, thereby avoiding an outcome similar to Trajectory C in Figure 4, there will need to have been a change in the nature of "self-interest," with an emerging emphasis on an interdependent whole, with decisions made by consensus, and a receding emphasis on independent parts, with decisions dictated by power.

The Uniqueness of Our Current Evolutionary Challenge

Assuming that we will be successful in making the transition from Epoch A to Epoch B, where do we stand in this process? A glimpse of our present situation, and the uniqueness of our current evolutionary challenge, is highlighted in Figures 7 and 8.

Figure 7 illustrates an example of the projected growth in world population over the next several millennia, assuming that no catastrophes intervene. The figure indicates that we are currently on the steepest portion of the population growth curve, which is centered over the period around the year 2000. The uniqueness of this period over the course of human history is emphasized in Figure 8, which depicts the rate of change in population growth over this same span of time. As illustrated in the figure, a sharp peak in the rate of change in world population occurs at the point of inflection of the curve,

[6]Adapted from J. Salk. (1973). *The Survival of the Wisest.* New York: Harper & Row.

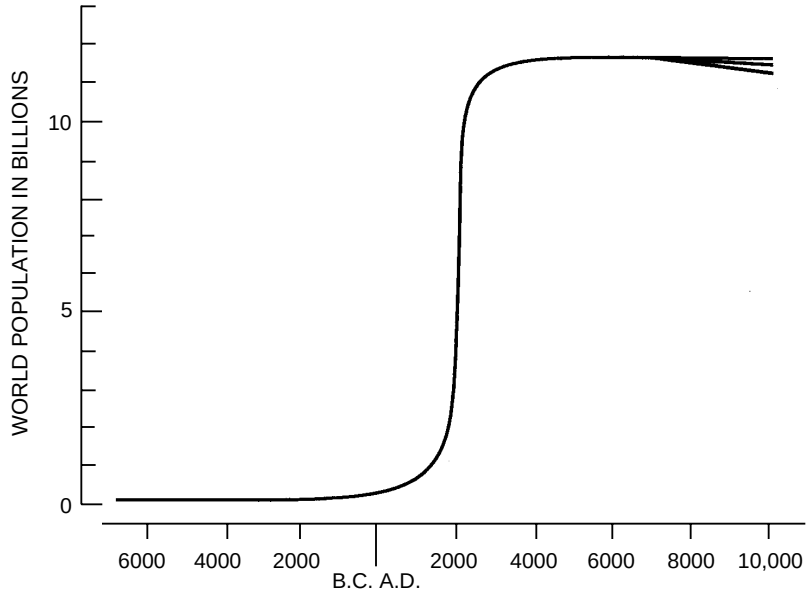

Figure 7. Projected world population growth.[7]

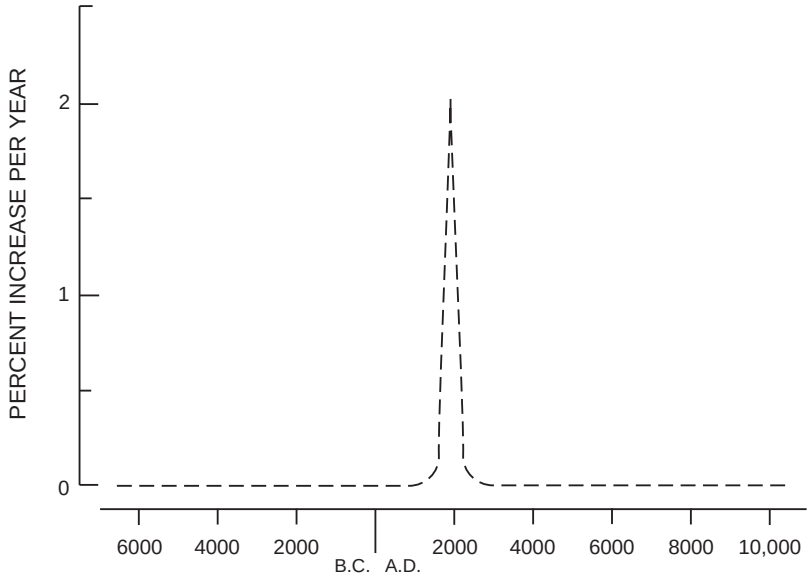

Figure 8. Projected rate of change in world population.[7]

[7]Adapted from J. Salk & J. Salk. (1981). *World Population and Human Values: A New Reality.* New York: Harper & Row.

which is projected to occur in the present era.

Humankind is thus facing a metabiological evolutionary challenge which is unique in human history: that is, to evolve from an emphasis on those qualities and values which have characterized Epoch A of the growth curve to an emphasis on those qualities and values which will be required to bring about Epoch B.

Will We Succeed?

We do not yet know whether we will succeed in this process. It is clear that humankind *possesses* the repertoire of characteristics required to promote a transition from Epoch A to Epoch B. The question is, are we capable of *expressing* the appropriate characteristics sufficiently quickly and to the extent necessary to avert a catastrophic outcome?

This question appears to be of more than theoretical interest. On a practical level we might ask: are there steps that we might take to increase the likelihood of success in meeting this challenge? Are there ways that we can intervene consciously and creatively in the metabiological evolutionary process in which we are now engaged?

Intervening in the Metabiological Evolutionary Process

Our ability to intervene in the evolutionary process at any level is dependent upon our knowledge and understanding of the mechanics of evolution in the pertinent realm and our ability to develop and apply technologies that can influence these mechanics in such a way as to produce the desired outcomes. We have, over the past centuries, gained deep insight into the mechanisms underlying the evolutionary process in both the prebiological and biological realms, and, based on our accumulated knowledge, have now become active agents in the evolutionary process in both these realms. For example, physicists can catalyze reactions which have heretofore taken place only in stars; chemists can create new kinds of molecules; biologists can create new kinds of microorganisms, animals, and plants. When applied wisely, such knowledge holds the promise of contributing in positive ways both to human life and to the rest of the environment. It would seem useful if knowledge were to be similarly available that would allow us to influence, in the most desirable way, evolution in the metabiological realm as well.

Characteristics of the Three Evolutionary Realms

An examination of various features characterizing the three evolutionary realms (Figure 9) may be helpful in guiding our thinking regarding ways in which we may play a more conscious and active role in the metabiological evolutionary process.

The fundamental property of the universe which underlies evolution in the prebiological realm is matter, which has evolved into all of the various forms that we see in the world around us, leading eventually to the emergence of the highly complex, self-replicating forms which we call “alive.” Life, then, is the fundamental property which forms the basis for evolution in the biological realm, leading to the development of more and more complex creatures with more highly developed nervous systems, culminating (as we see it) with the emergence of human beings, in whom the property of consciousness is highly developed and clearly displayed. This property of consciousness, then, forms the basis for

	PREBIOLOGIC	BIOLOGIC	METABIOLOGIC
PROPERTY	MATTER	LIFE	CONSCIOUSNESS
UNIT	ATOM	CELL	MIND
COMPONENTS	NUCLEUS / ELECTRONS	GENE / SOMA	INTUITION / REASON
ATTRIBUTES	INTERACTION	PROCREATION	CREATIVITY
DETERMINANTS	PROBABILITY	NECESSITY	CHOICE

Figure 9. Characteristics of the three evolutionary realms.[8]

the evolutionary process in the metabiological realm, and underlies the development and appearance of the manifold contents of the awareness of each individual, and all of the complex interacting systems that form our culture and society.

As the process of evolution unfolds, the primary unit upon which evolution acts in the prebiological realm might be considered to be the atom or molecule (at least at the temperature scales which characterize that portion of the universe with which we are in primary contact today). The primary unit in the biological realm might be considered to be the cell or organism, and in the metabiological realm the individual mind or collective mind.

The unit of prebiological evolution, the atom or molecule, is composed of binary components consisting of nucleus and electrons, with the nucleus determining the number of electrons in each atom, and the electrons (in conjunction with the nucleus) determining the chemical properties of the atoms and hence the types of molecules which can be formed. The unit of biological evolution, the cell or organism, is composed of binary components consisting of the genes and the soma, with the genes determining the properties of the soma (body), and the properties of the soma determining how successful the cell or organism will be in surviving and reproducing. The unit of metabiological evolution, the individual or collective mind, similarly is composed of binary components consisting of intuition and reason, which together lead to the thoughts and ideas which constitute the substrate for the metabiological evolutionary process.

The attribute of matter which underlies evolution in the prebiological realm is the ability of the units of matter (on all scales) to interact with each other via gravitational, electromagnetic, and other fundamental forces. The attribute of living systems which underlies the evolutionary process in the biological realm is the ability of the units to procreate, or to reproduce. Evolution in the metabiological realm depends upon the ability of the units (minds) to create.

The course of evolution in the prebiological realm is determined by the probability of

[8]Adapted, with modification, from J. Salk. (1983). *Anatomy of Reality: Merging of Intuition and Reason.* New York: Columbia University Press.

particular interactions taking place between units of matter, based on the quantum mechanical and other properties of their components. The course of evolution in the biological realm is determined by the necessity for the appearance of new characteristics to permit the continued survival of a species under changing environmental circumstances. The course of evolution in the metabiological realm is determined by the choices that we make, individually and collectively, in the conduct of our lives.

Influencing the Evolutionary Process

What guidance does an analysis of this type provide in structuring an approach to facilitating the course of metabiological evolution? Our ability to influence evolutionary processes in the prebiological realm has derived from a systematic understanding of the nature of matter, including the properties of atoms and their components (nuclei, electrons, and other fundamental particles), and the consequent development and application of technologies that permit us to alter the probability that particular interactions will take place. Our ability to influence evolutionary processes in the biological realm similarly derives from a systematic understanding of the nature of life and living systems, including the structure and function of the genetic and somatic components of cells and organisms, and the development and application of technologies that can modify both the procreative process itself and also the subsequent selective processes in such a way as to shift the determinant of biological evolution from the necessity imposed by the environment to the desires and needs of humankind. We might therefore expect that a systematic understanding of the nature of consciousness, and the properties of its units, the individual and collective minds, with their intuitive and reasoning components, might enable us to develop and apply technologies that would enhance the creativity of individuals and society in such a way that the quality of the choices that we make will be of optimal evolutionary value.

It appears, therefore, that if we are to optimize our ability, as active agents in the metabiological evolutionary process, to influence our present as well as our future history in the most rewarding way, it will be of value for us to develop and utilize a metabiological science concerned with consciousness to complement and extend the existing prebiological and biological sciences concerned with matter and with life.

Implications for World Peace

Evolution can proceed smoothly or it can be punctuated by cataclysmic events. The course of human metabiological evolutionary history so far has seen periods of both types. A disinterested observer not involved in the process might not care whether the course of evolution is bumpy or smooth; but those of us directly involved as both participants in the process and as progenitors of those to follow have, whether we experience it clearly or less clearly, a personal stake not only in how our present is lived but also in how our future will unfold.

What choices can we make that would improve the likelihood of a peaceful course in our future evolution? What steps can we take that would increase the probability of experiencing peace and reduce the probability of war?

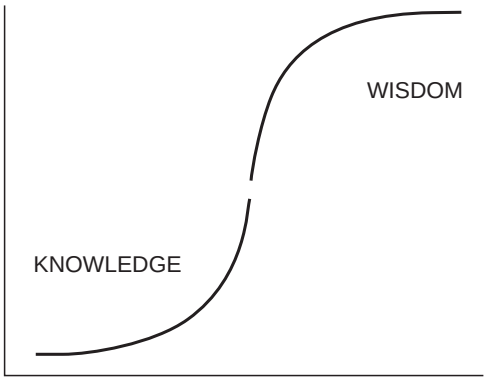

Figure 10. Wisdom vs. knowledge.[9]

Development of Wisdom

I am going to borrow an image to help illustrate the direction in which an answer may lie. Figure 10 presents schematically the concept that, on balance, the focus of human intellectual endeavors in Epoch A has been on the acquisition of knowledge—one might say of knowledge of the parts, or understanding in as great detail as possible the inner workings of all the various aspects of nature and its functioning. In contrast, in Epoch B, there would appear to be a need for a growing focus on the development of wisdom—which might be considered to be knowledge of the whole, or comprehending and having lively in the awareness of both individuals and society the holistic value of nature's functioning—so that decisions and actions made will be maximally beneficial for the present and future of individuals, society, and the environment.

Where can we look to locate wisdom? How can it be encouraged and developed? If there is indeed wisdom to be found in nature, and wisdom to be found in the human side of nature, how can it be teased out, nurtured, and caused to spread?

The Role of Consciousness

Based on the various presentations made by members of the MIU faculty during this conference, one might be tempted to say that wisdom can be located in consciousness. This conclusion might be reached both from the descriptions of consciousness which we have heard, and also from the word *consciousness* itself, which derives from two parts: *con,* meaning "together," and *scire,* meaning "to know"—that is, "knowing all together," "that location in which all knowledge is found together," "knowledge of the whole."

It is clear from observations of both ourselves and those around us that consciousness can be experienced and expressed in both fragmented and integrated states. It appears to me that the fundamental problem we are faced with in the world today is that

[9]Adapted from J. Salk, unpublished figure.

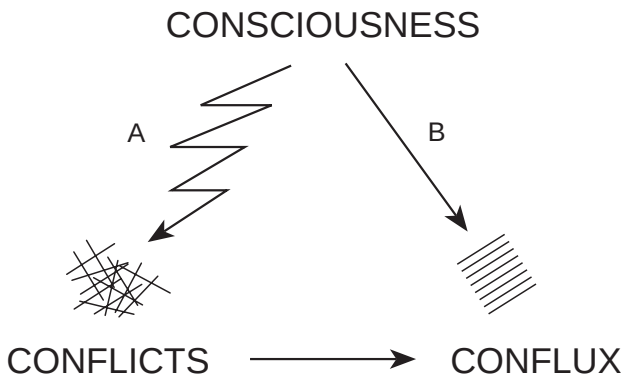

Figure 11. The transforming value of consciousness.

consciousness is primarily experienced and expressed in a fragmented and not fully developed form. As a result, the divergent tendencies exhibited by different individuals, cultures and nations in the world clash together in the form of conflicts (*con* = "together," *fligo* = "throw" or "strike"). This situation is illustrated schematically in Figure 11, part A, where fragmented or distorted consciousness leads to conflicts in interpersonal and intersocietal relationships. Such a situation appears to be consistent with the all-too-frequent experiences that have characterized Epoch A. On the other hand, if consciousness is experienced and expressed in a more coherent, clear, and holistic state, then it would seem as if the possibilities would be greatly improved that the divergent tendencies of different individuals and societies, while remaining distinct in their own right, might come together in a more aligned and harmonious fashion (Figure 11, part B). As a result, with a change in consciousness from a more fragmented to a more integrated state, we might expect to see a transformation from conflicts into conflux, or "flowing together," "assemblage," "assembly."

Teleological Evolution: A Call to Action

We are currently faced with a unique and critical evolutionary challenge: to make a transition from Epoch A of human metabiological history to Epoch B. There seems to be no way to predict whether we will rise to the occasion and successfully meet this challenge. As a result, there is a great deal of uncertainty, doubt, and tension, as well as hope, prevalent in the world today (Figure 12). One might look upon our present situation as a disinterested scientist, and consider that our species is undergoing a grand experiment, the outcome of which remains unclear. However, as an individual immersed in the process, I find it hard to be disinterested in the outcome of the experiment. Indeed, on a personal basis I cannot help but feel ("unscientific" as those feelings might be) that there is some "purpose" or "destiny" involved in the process—that nature would "like" us to succeed. These feelings bring to mind a concept that my father has recently been discussing which he calls *teleological evolution*, or evolution with a purpose. Viewed in this light,

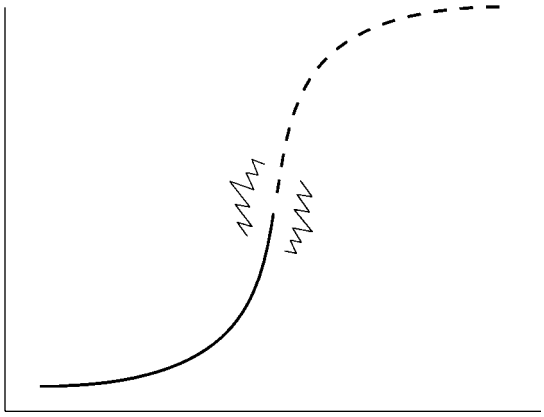

Figure 12. Uncertainty and tension in our times: A call of nature.

the tension that we feel now might be considered to be a "call of nature": nature is calling, is sending us a message, and it is up to us now to decipher the meaning of the message. Each of us may hear and respond differently to the call, according to our own *telos*, or individual path or purpose in life, and as individual reflections of the telos of our species. Based on the contributions to this conference, I would say that we are being called to come together, from all our various disciplines, using all of the approaches discussed here at this conference, to create coherence both at the deepest level of individual and collective consciousness and also in all the more outward expressions of life, thereby creating the conditions necessary for building and maintaining a stable world peace.

Acknowledgements

The current paper derives much of its content (including Figures 1–8 and, with modification, Figure 9) from a paper entitled "An Evolutionary Approach to World Problems," by Jonas Salk and Peter L. Salk, prepared initially for the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1982, and subsequently published in 1990 in *World Affairs* (volume 1, pages 5–10). Concepts discussed in the last sentence of the "Epoch A and Epoch B" subsection of "Our Current Evolutionary Challenge" are adapted from Figure 10 in a pamphlet entitled "The S-Shaped Curve: Emerging Values in a New Reality," published in 1990 by Beyond War (Palo Alto). I am grateful to my father for the many conversations and discussions which contributed to the development of this piece, and for various images and phrases which I have borrowed without direct attribution. I am also grateful to Maharishi for providing me with a fuller understanding of the nature of consciousness and the potential role of its development in enhancing the process of metabiological evolution and the emergence of world peace.