

## The Evolution of Reality\*

George Land

### Abstract

The evolutionary reality of nature is moving every growing thing to higher and more complex levels of interconnection and interdependence. As nature's most successful evolutionary partner; humanity has now created a complex network of connections that has brought the earth into an interdependent global village. The principle of entropy maintains that all systems are ultimately headed downhill. The evolutionary evidence of creative growth and change going on within every natural system indicates quite the opposite. The challenge for humanity is to understand that the creative process of nature is pulling all systems including organizations and civilization to a future different from the past. To align with nature's processes requires being open to making new and different connections with people, ideas, resources, and opportunities. The Bahá'í Faith is one of nature's "strange attractors" which holds out the possibility that humanity can bring into being what never existed before. The Bahá'í belief in visualizing a creative, purposeful peace is in complete alignment with nature's creative processes.

### Résumé

La réalité évolutive de la nature pousse tout ce qui croît vers des niveaux toujours plus complexes de communication et d'interdépendance. L'humanité, dont l'évolution est la plus réussie de la nature, a créé un réseau complexe de connexions qui a fait de la terre un village global interdépendant. Le principe de l'entropie soutient que tout système est ultimement voué à la dégradation. Les preuves évolutionnistes de la croissance créative et du changement propres à tout système naturel nous indiquent le contraire. Le défi qui se présente à l'humanité est de comprendre que le processus créatif de la nature dirige tous les systèmes, y compris les organisations et la civilisation, vers un avenir différent du passé. Pour s'aligner avec les processus de la nature, il faut être ouvert à l'établissement de liens différents et nouveaux avec les gens, les idées, les ressources et les occasions qui se présentent. La Foi bahá'íe est une «force d'attraction étrange» de la nature, qui offre à l'humanité des possibilités n'ayant jamais existé auparavant. La croyance bahá'íe, qui permet de visualiser une paix créative et dirigée est en accord total avec les processus créateurs naturels.

---

\* This paper was originally delivered at the Association's 12th Annual Conference, "Converging Realities," Princeton University, October 22–25, 1987.

## Resumen

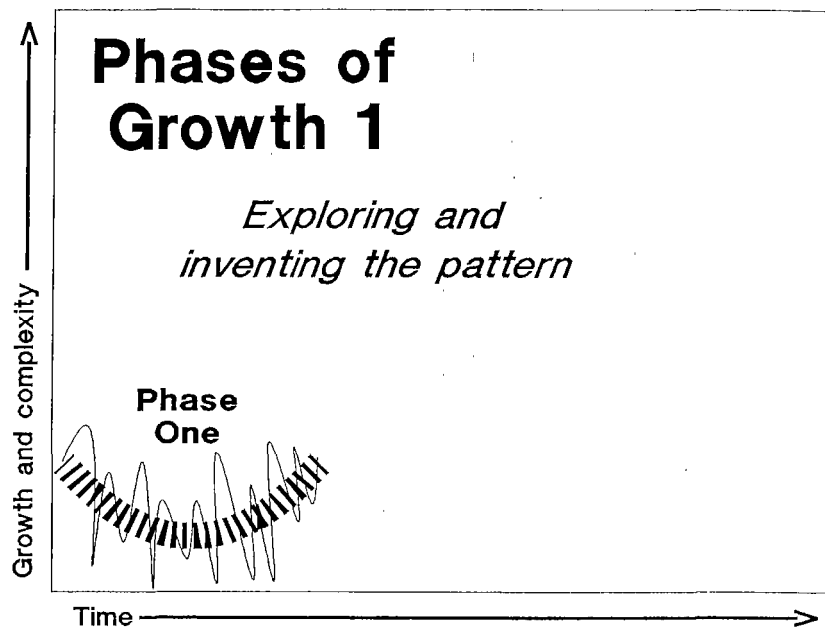
La realidad evolutiva de la naturaleza encamina todo lo crecedero hacia niveles más altos y más complejos de interconexión e interdependencia. Siendo la socia evolutiva de la naturaleza de mayor éxito, la humanidad ha creado ahora una red compleja de conexiones que han hecho de la tierra una aldea global interdependiente. El principio de la entropía sostiene que, en últimas, todos los sistemas están en proceso de venir a menos. La prueba evolucionaria de cambio y crecimiento creativo ocurriendo dentro de todo sistema natural indica todo lo contrario. El reto para la humanidad está en comprender que el proceso creativo de la naturaleza está llevando todos los sistemas, incluyendo organizaciones y la civilización hacia un futuro distinto a su pasado. El alinearse con los procesos naturales requiere receptividad a forjar nuevas y diferentes conexiones con gentes, ideas, recursos, y oportunidades. La Fe Bahá'í es uno de aquellos "atravesados desconocidos" de la naturaleza que ofrece la posibilidad de que la humanidad pueda dar vida a aquello que jamás había existido antes. El convencimiento bahá'í de visualizar una paz creativa y repleta de propósito está completamente alineado con los procesos creativos de la naturaleza.

Ervin Laszlo\* talks about systems and how systems build upon systems, and I want to extend those thoughts and his pioneering work in this area. To begin with a heresy, perhaps a major heresy: We have now come to the conclusion that the interpretation of the second law of thermodynamics, known as entropy, was incorrect. There is really no evidence that the universe is headed into a heat death; in fact, the evidence is quite the contrary. When one examines the original proofs of entropy, there are errors. So the fundamental assumption underlying everything I am going to say here in a way flies in the face of the notions about entropy.

What we see in the universe is a series of states of progression from one level to another in which everything is connecting at higher levels. The function of bringing things together has more words to express it in the English language, more synonyms than any other single function. I use the word *connecting* because what we see going on around us is a connecting process and a process in which all things are brought into higher levels of connection. There are more and more complex connections, more and more interdependent connections over time, and these processes indeed take on a pattern, a series of waves. They are regular waves in the sense that we have waves of seasons,

---

\*Dr. Laszlo is rector of the Vienna Academy for the Study of the Future, director of the International Institute for Evolutionary Studies, and science advisor to the director-general of UNESCO. Among his writings is "Humankind's Path to Peace in Global Society," *The Journal of Bahá'í Studies*, 2.2. He was also a speaker at the Association's 1987 conference at Princeton University.



*Illustration 1*

tides, waves of change over time. Illustration I shows how these waves take the shapes they do over time. Time is shown going from left to right, and the process of growth is shown in the vertical dimension.

One of the things we discover when we start to look at processes of nature and the commonality of nature's processes is the blurring of many traditional, sharp dividing lines. Operating throughout this process that I want to examine is something that can only be described as intelligence. Even at its very lowest atomic and subatomic levels, manifestations can be found that could only be described as living. It gets very confusing when you see subatomic particles over time manifest functions that can only be described as living and intelligent and, indeed, creative. I find it very difficult to draw any comfortable lines about some of these central issues.

What we see in the beginning of every system, whether it is the growth of a child or the growth of a nation or an organization or a molecule or a crystal, is an initial period in which the thing that is growing is attempting to find a pattern by which it can organize itself and the environment around it. Its internal pattern must match what is going on outside because of the organism's integral drive to organize the environment. This first "forming" phase in all areas of the sciences is very confusing because it is formless. There is no pattern. When one looks at the early behavior of anything, one finds chaos, or what appears to be chaos. On later examination one discovers a pattern in the sense that this is a

creative process—a process of invention, of reaching out in the environment trying different bits and pieces, and of assembling them into a pattern.

Once that pattern is found, a major shift occurs in the system. All of the characteristics of its behavior that were dominant in the first phase change completely one hundred and eighty degrees. It shifts into what we call the “norming” phase. The goal of this phase is to use and focus the energy in such a way that it gets the maximum return on its organization. It stops investigating, stops exploring, stops creating, and goes into a period of replication and incremental improvement. (See illustration 2.)

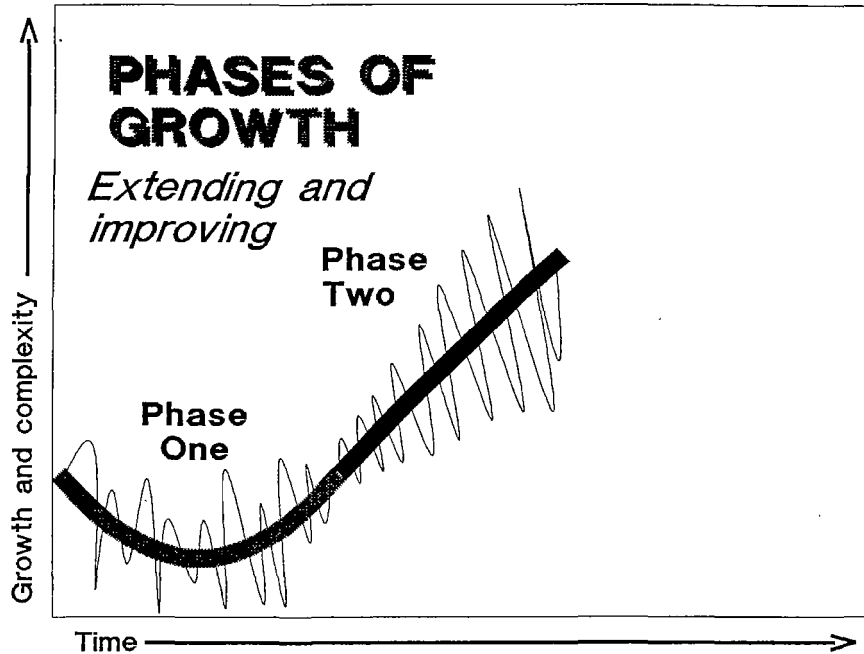


Illustration 2

An “envelope” of sorts surrounds this growing thing. It creates mechanisms by which it can avoid what is different. It looks into the environment for things like itself, similarities, resonant congruities, and it grows on the basis of the extension of those likenesses. It deals with differences according to how big a threat they manifest. If they are small enough, the organism ignores them; if they are larger, it may kill them; and if they are too large, it runs from them. This is a very successful period because the energy in the system is being used very efficiently. This is quite different from the first phase.

If the system is successful (and well over ninety-nine percent of the systems we have studied fail somewhere in this transition), if it makes the transition and goes into the second phase, then it runs into a law of nature we do not talk about very much, “nothing fails like success.” If the organism indeed reaches out and organizes its environment effectively, sooner or later it is going to run out of

things to organize. It starts to run into diminishing returns, and it starts to have a problem; it goes into another transition, another phase change.

These phase changes are absolutely monumental. Again, the behavior of this system shifts one hundred and eighty degrees—to an “integrating” phase. The a priori rule, which said avoid the new and different, is superseded by the necessity to open up the pattern and to make room for the integration of the new and the different. The organism goes into a process (one word which I think is very useful is “wholing”) where it makes itself whole. At the same time another activity is occurring, a bifurcation. (See illustration 3.)

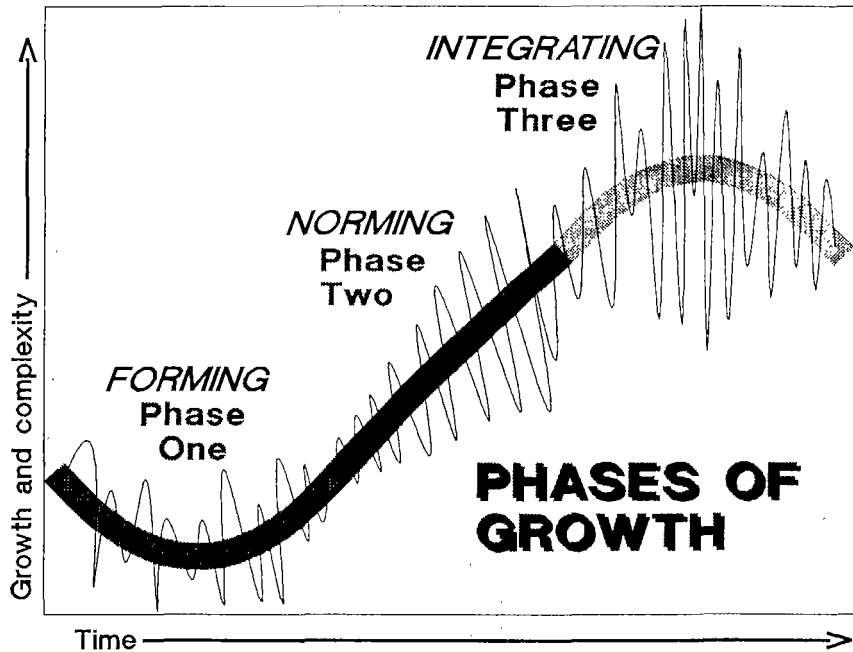


Illustration 3

Somewhat isolated in various ways from the main currents of the organism, represented by the integrating process on the top line of the illustration, a new phase one is beginning. Here the organism incorporates the old system but now begins to explore a much broader environment and starts to organize a new pattern in this much broader environment. Again, if one were to look at it by itself, this process appears fairly chaotic. It is very hard to identify that new first phase when it is going on, and those having had experience with an entrepreneur in business will know what the first phase is. It is crazy. It has no pattern; it is trial and error. When a pattern is found, the organism moves to a higher level of organization, usually by one order of magnitude that is at least ten times more complex and begins another second phase at the crossing point. (See illustration 4.)

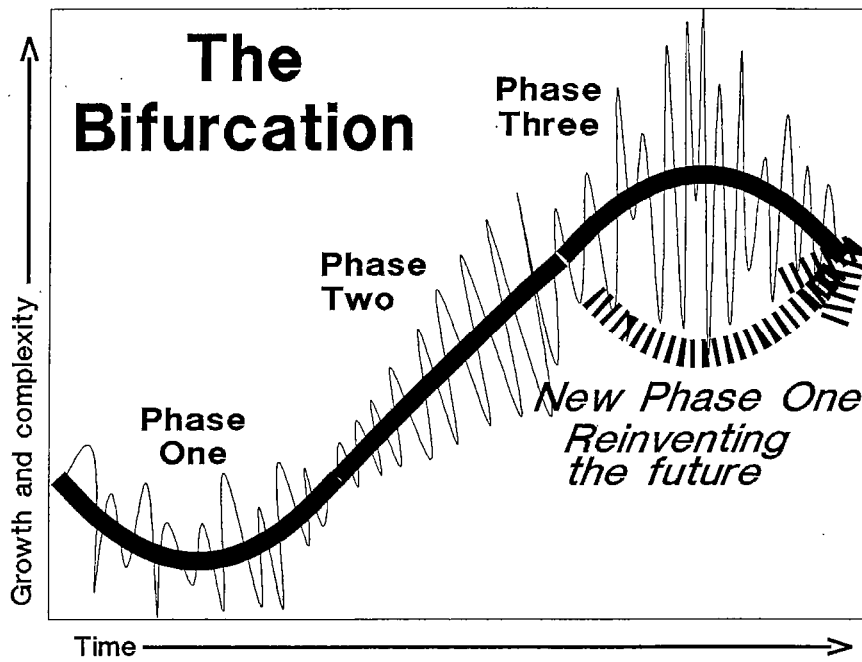


Illustration 4

So what you see in brief is a whole series of evolutionary cycles in which systems build upon systems. The laws that govern these changes from system to system are very consistent; they are basic laws themselves. The phenomena are much more complex at each level, and sometimes it is difficult to compare what is happening at the subatomic particle level to what is happening at the inter-phase stage of cell growth. But, in fact, when you examine the mechanisms, the basic laws, the dynamics of the system, you find that they are identical.

How does all this relate to the evolution of human beings and where we are in this cycle? We are at a very interesting time. There is a Chinese curse that says, "May you live in interesting times." We have all been cursed! If we go back to about fourteen or fifteen thousand B.C., we begin to see people living together in fairly large, stable groups. Archaeologists cannot find any stability in this kind of early village life. The villages appear, disappear, move around. There is a paradigm, a cognitive map that is going on during this period. It is an ancient cognitive map and a very important one for us to think about. For that kind of semi-nomadic and nomadic existence, the reason things happen is because they happen. It is acausal. Things are inhabited by spirits; if a tree falls, then the tree's spirit believed that it should fall. I once went to live for several months with a nomadic tribe in Mexico. I discovered there were no words for "why" in their vocabulary. In fact, there were very few questioning words because things were taken for granted. Things just happen; life happens to you.

During this period of civilization, we see people experimenting with a new paradigm. One day someone planted a seed on the river bank or in the debris next to a village and noted that a plant grew. They tried it again and again, and

presumably they tried a score of seeds and got the idea that if they put the seed in the ground something would happen. They shifted their beliefs, and gradually over that eight-thousand year period a new way of thinking came into being. They got the idea that they could manipulate their own existence, that they could take dominion over the planet. They began to see a causal relationship in the events of their lives.

I use the word *causal* here as a temporal sequence—causal, as cause-and-effect, as having been caused in the past. Whether this was written down or not, this was the paradigm; it became the paradigm. Once you have causality, then you have the question of who makes things happen. Before long, you enter a hierarchical notion of how things work. You also enter into an idea of inequality. Some are more equal than others. Emerging from that comes determinism and the mechanistic idea that the universe was sort of a great clockwork mechanism. If one knew the initial conditions, one could predict with total certainty everything that was going to happen in the future.

The creative human spirit is absolutely indomitable, however. For thousands of years people generally accepted as the official truth that we lived in a deterministic world, and yet they did not get depressed. That is amazing to me, when you know that this is nothing more or less than the human spirit emerging from a barricade of causal determinism. Because if everything is known in advance, life is not going to be very exciting. Certainly it does not portend well for my having much effect on my environment or my life or my future or anything else.

That logical notion has been with us about eight-thousand years, and it has built up and built up; it is still fairly prevalent. It particularly manifests itself in the world that we inhabit in organizations. It is known as the “management” paradigm in which there is a normal hierarchy of control. The idea of the manager is to take a path, project it into the future, and control it. At some point, we run into a period in which the linear progression of an incremental system, bounded by rules that keep it within that envelope of change and growth, begins to change.

We believe the evidence we see around us in the world today that we are now moving into the third phase—and we have been moving for some time. We are just starting to notice that we are living in a very interdependent world and that official reality is not what it was cracked up to be. We have been trying to grapple with the notion of reality, and this is what the third phase is about. It is a shift in how we conceive reality to be, and it is a gigantic shift. It is just as big a shift as going from having lived for thousands, indeed for hundreds of thousands, of years in an acausal, spirit-driven world where you were subject to nature’s whims to living in a world you could control and predict.

We are now shifting to what we call a “creative worldview,” an integrated and creative paradigm. I say “creative” because there are some very peculiar things that come out of all of this continuity that we have dealt with in the sciences. To deal with the changes we have today, we just cannot simply get better at what we do. That will not do it; it does not work. We are dealing with a new

kind of change; it is not merely more rapid, turbulent, and complex. Now with all these things going on around us, the only surprise that we would have today is if there were no surprises. The one thing you learn to expect is that things are not, that the future is not what it used to be and never will be again.

Around the turn of the century, science ran head on into a mountain of discontinuities. The one that stands out deals with the nature of reality and the emergence of quantum physics. In today's larger environment where new things are coming together, new juxtapositions are producing in their syntheses new energies, new phenomena that could never have been predicted. They are producing "quantum" discontinuities, leaps that we have never before experienced in the history of civilization. The whole notion of human rights is a gigantic discontinuity, as is the idea that minorities and women should have rights. Minorities and women have been with us for some time; isn't it interesting that we are just noticing that they are human beings? It is a powerful leap from the past, and there is a chasm between where we stand now and where we used to stand. In order to deal with this, in order to be effective as a human being, in order to live a successful life with an organization that is going to function well on this planet, and in order to have a planet that is going to function well, we need to think about a new possibility in terms of what reality is.

I would like to discuss a couple of notions that come out of quantum physics. When we really begin to look at the implications of quantum physics, some things become apparent that are quite surprising. Whenever you try to predict anything based on the past, you are going to make a mistake. That is very sure. If you try to track a particle that has been from A to B and you now try to project its trajectory from B to C, you might as well forget it. Whatever you predict, the odds are extraordinarily high it will be wrong. Yet, if you look at those phenomena in aggregate, they will always add up to predictable patterns! The interesting thing about probability theory in itself is that it is not about probability; it is about certainty. Certain patterns are going to occur, but you can't track them from their past.

There is another way to look at all this that has eluded science, quite deliberately, because it was the province of religion. I think Newton cut a very clear deal between the sciences and the Church of England—that was, to keep out of their business. That issue is purpose. In biology, one of the areas of study that has recently come into its own is the study of autopoietic systems, self-organizing, self-creating systems. Your body is one of them. Your body has about sixty or seventy trillion cells in it. Right now, the cells sitting next to your left little toe are making some decisions, and they are not bothering to go to headquarters. The odds are that they are going to make pretty much the right decisions. When you imagine running an organization with sixty or seventy trillion organisms in it, it is mind boggling. I am in a state of perpetual awe thinking about what goes on in the human body. How does it work that it works?

I was at the New York Academy of Sciences several years ago when an eminent molecular geneticist had a recommendation about restructuring the human body. He gave a talk on "God's Mistakes." He had studied the energetic



activities of the average cell in the human body, and it turned out that the average cell spends fully 30% of its energy doing nothing but maintaining the integrity of the DNA it is carrying around, about 99.9% of which is superfluous. Why should every cell in your body have a complete blueprint of the whole human body in it? That does seem like tremendous overkill. So he said, Let's eliminate this "junk" DNA and put these cells on a "need to know basis," somewhat like the way General Motors is run. By, doing so, we can reduce the caloric input enormously and solve the world's food problem. It would require a bit of genetic engineering to pull it off.

Nature does this with plants and animals, and it does so throughout the whole system for a very simple reason—it is a self-referencing system. These cells are able to make independent, automatic decisions from minute to minute, based on their inner picture of the whole and their connection with the whole. They have all that information and can be extraordinarily flexible. The system can respond very rapidly because it has reference to its whole purpose and to itself as a part of the system.

That is an autopoietic system. You see the same kind of phenomenon occurring when a crystal is formed on the inorganic level. Those molecular resonant patterns in the nucleus of the atom carry themselves throughout the crystal and help it organize. They help individual atoms make decisions and choices about how they are going to locate themselves, what kind of energy bands the electrons are going to reside in, and so on. Every individual part has a picture of the whole. They have reference to purpose. So the first principle in terms of rethinking our way of thinking about reality is that it is very conceivable that the major force in terms of causing things is not the past but the future.

If I am on a journey from here to somewhere out in the future where I would like to be in terms of purpose, in terms of vision, in terms of mission, then the issue is, How do I connect in the best possible ways with everything in my environment that might be accessible to me in my voyage from A to B? To answer that question, we need to go to another precept of quantum physics: There are no "things" in the universe. There are no quanta. In fact, all you can find when you go looking for them are sets of relationships. Things define themselves by their relationships, minute to minute. If I am journeying on a purpose, on a vision, toward a new point of organization, I want to make myself accessible to all of the possible connections that might be around me.

Now, how can I get in the way of this natural drive; how can I make myself inaccessible? I simply do what we teach people to do in the second phase of social systems—prejudge the connections and their environment, create screens that protect us from connecting with things which might be different from us.

Let me put the positive side of it a different way. As far as we can see, the most bottom-line principle in terms of making a successful voyage to a destination in the future is to embrace one condition, and that condition is "unconditional love." When people practice unconditional love, suddenly the environment—the connections—become available to them. They perceive what is going on in the environment without having perceptual screens and filters.

When love is present and when it is not conditional, it opens the door to all those serendipitous coincidences that occur when somebody is fully and purposely committed to loving.

On his bulletin board, a good friend has a motto that I agree with wholeheartedly. The motto is Do not expect miracles; rely on them. You are a miracle. If you logically try to work out a progression of states leading to a human being out of inanimate matter, out of plants or animals, you are not going to get there. It requires a creative process. It requires the creation of the impossible. We live in the kind of universe that is constantly creating miracles.

Atoms created their own reality, and molecules did, and cells did, and then plants and animals did. Now human beings are sitting here with the responsibility of creating their own reality. It does not make any difference what the objective reality is around us; the issue is how we relate to it, because we create ourselves from moment to moment in our choice of how we relate. We are self-creating creatures. This is very exciting because it means you can choose to create yourself in the way you want. However, we have not been getting that message out fully in the social system of all of the world yet. We still have a sense that there are other powers that control us, that we are in a hierarchical system, and even that some things just simply happen to us.

There is a problem with all of this second-phase thinking facing us, and this is the challenge I would like to put to the Bahá'ís. What we see in systems is that the transition is very difficult. In transition, sometimes whole systems go into extinction and have to be replaced. The process is inevitable. I think that there is a saying among Bahá'ís that "peace is inevitable." I absolutely agree with that, but it may not be true—in the short run—for human beings, and that is the issue.

We find when we study systems that when the second phase starts to move into its transition, it runs into a problem of encountering the unknown, the unexperienced, and it has a little bump on it which the system attempts to return to the past. (See illustration 5.) We now call it the "Back to Basics" bump, because what organizations say on the human side of things is "Gee, things aren't working; things used to be wonderful; let's get back to the good old days. Let's cut out all the stuff that isn't pertinent to what we are about. Let's get tight, get right, get lean and mean, and everything is going to be fine." Now, the tragedy behind this is that for a little while you can do it; you can squeeze fat out of any system and make it look healthy. I hate to tell you how many corporations are involved in doing this and how many large institutions, university systems, for example, are involved in doing this. Making it look healthy, creating an illusion of health and growth when in fact the environment is continuing to move along regardless of this resistance. The system progressively invests more and more in defense. You protect yourself; you defend your territories; you defend your autonomy, your identity, and your control. The costs are enormous; they are so great that when the environment moves around past you and you need to change and be able to accommodate the new and the different, you do not have the resources left to do it. You go into a very rapid decline and sometimes extinction.

# Civilization's Journey

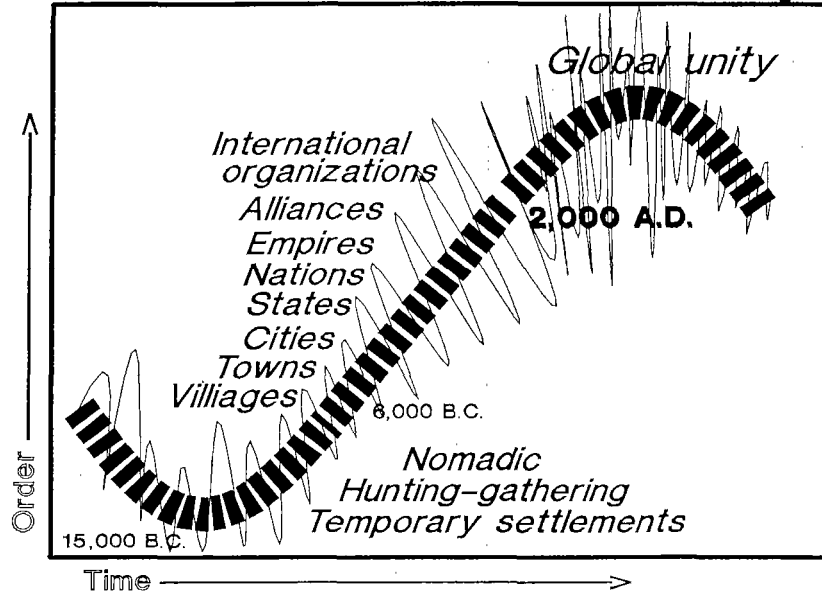


Illustration 5

Working with transnational corporations is exciting, as they are beginning to create their own new paradigm. They are rather quiet about it because not many organizations are ready to put on the front page of their annual report that their most important principle is unconditional love. They suspect that people are not going to understand it fully, and so they put the bottom-line results on the front page because the bottom-line results of unconditional love are absolutely astonishing. Ordinarily these companies will be four or five times as successful as companies who compete with them because they have given up competition. They don't even bother with competition any more; their issue/vision/goal is to provide the maximum value for their customers and to make the world a better place. You forget competition in that framework and don't worry about it. Competition is there to help you get better—the old Greek notion. Suddenly your customers get awfully happy with what you are trying to do for them. It is amazing! It really is so simple, yet it violates, in many ways, the old paradigm.

The issue, so fundamental to the future, is for all of us to experience this state, this new paradigm of creativity. It has only two conditions around it:

1. Be clear about your purpose, and be clear that your purpose is in alignment with the universe's purpose. Are you helping things get connected at a higher level? Are you an agent of evolution?
2. Make yourself available for the new—and different—connections that can happen in your environment; practice unconditional love.

If you are doing those two things, you are going to be living in a creative process. There is a very interesting by-product of all this—joy. Isn't it wonderful that the universe has given us an internal compass of extraordinary power, that we are endowed with a navigational system and a wonderful feedback system? It tells us when it's not working; because if we are not feeling joy, somewhere love is being withheld.

It is that simple. If you are really open to connecting with your environment, connecting with all of the different flavors and forms, and you approach it with purpose, you are going to experience more and more joy. You will begin to recognize when you are off track, because you are blessed with this kind of an internal guidance system. More and more people are beginning to think it is all right to feel joyful. Life need not be a vale of tears. What we find is that as people experience joy, and as they experience purposefulness and creativity and unconditional love, then the people around them start doing so also. They don't talk about it; people just start doing it. It seems to be contagious like a virus.

When we look at the Bahá'í Faith and its goals and its objectives, we believe that it can be what is called a "strange attractor" in the literature of the bifurcation theory. It starts to hold out a new model and a new hope of a world in a state of what we would think of as a creative, loving, and purposeful peace.