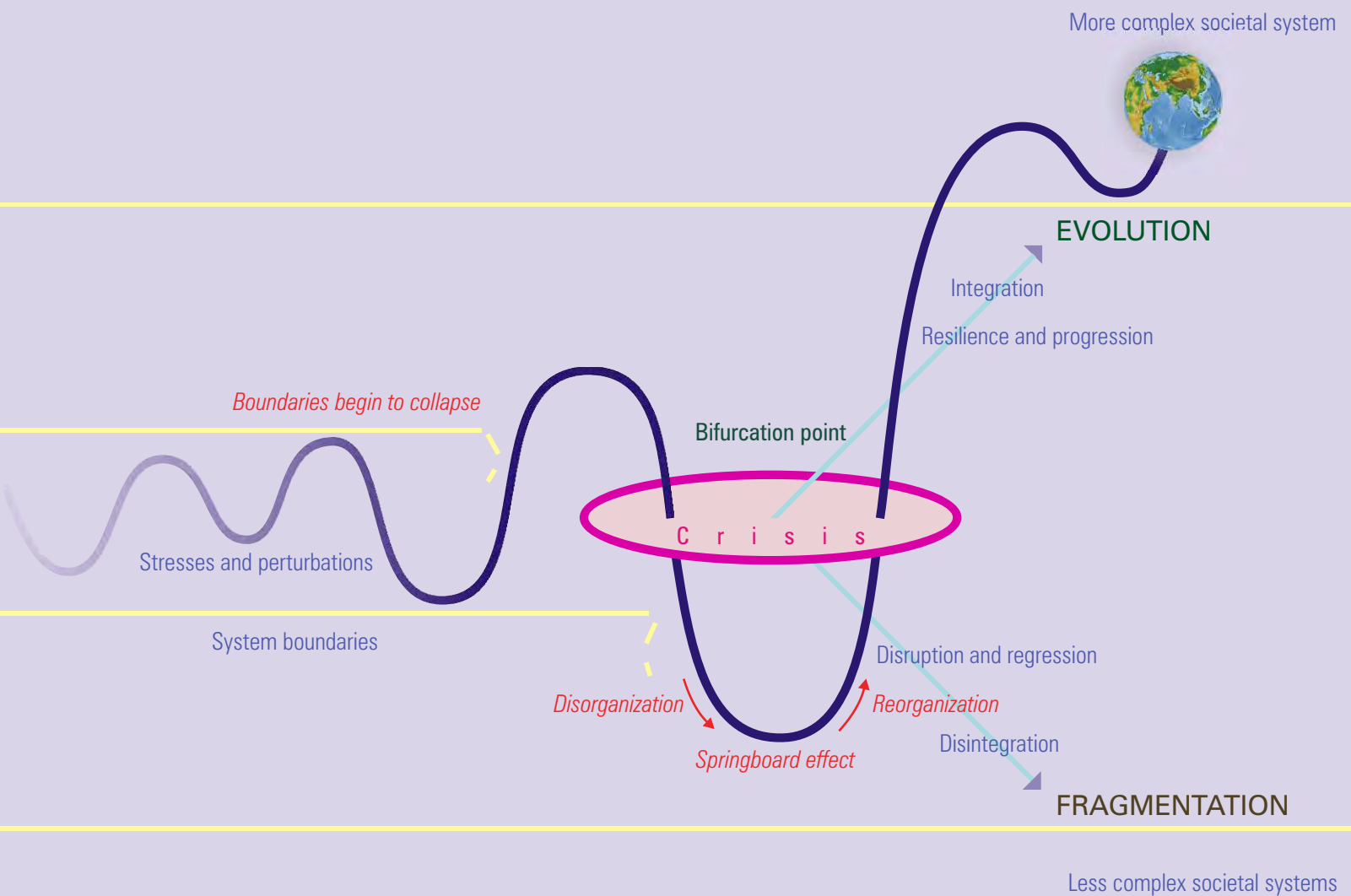


Collapse and Transformation

Duncan M. Taylor and Graeme M. Taylor



Terrorism will not destroy global civilization; our civilization will destroy itself

The world as we know it is coming to an end. Industrial civilization will soon collapse because of a fatal flaw: it is designed to grow constantly within a finite planet. [Diagram 1] Our economic system has reached its global limits of growth and is now unsustainable. Humanity is currently using 25% more renewable resources each year than the biosphere is producing.¹ This is deficit spending, which means that we are now consuming the biophysical foundations of our civilization. [Diagram 2] The pace of environmental destruction is likely to accelerate: between the year 2006 and 2050 world population is projected to increase from 6.5 billion to 8.9 billion,² while world consumption is projected to almost quadruple.³

While world population, per capita consumption and expectations are increasing, resources are declining. On every continent water tables are dropping, forests are disappearing, major fisheries are degrading, topsoil is eroding, oil and mineral discoveries are becoming rarer, and the air is being polluted. If present trends continue, global warming alone may cause the extinction of 25% of all existing animal and plant species within 50 years.⁴

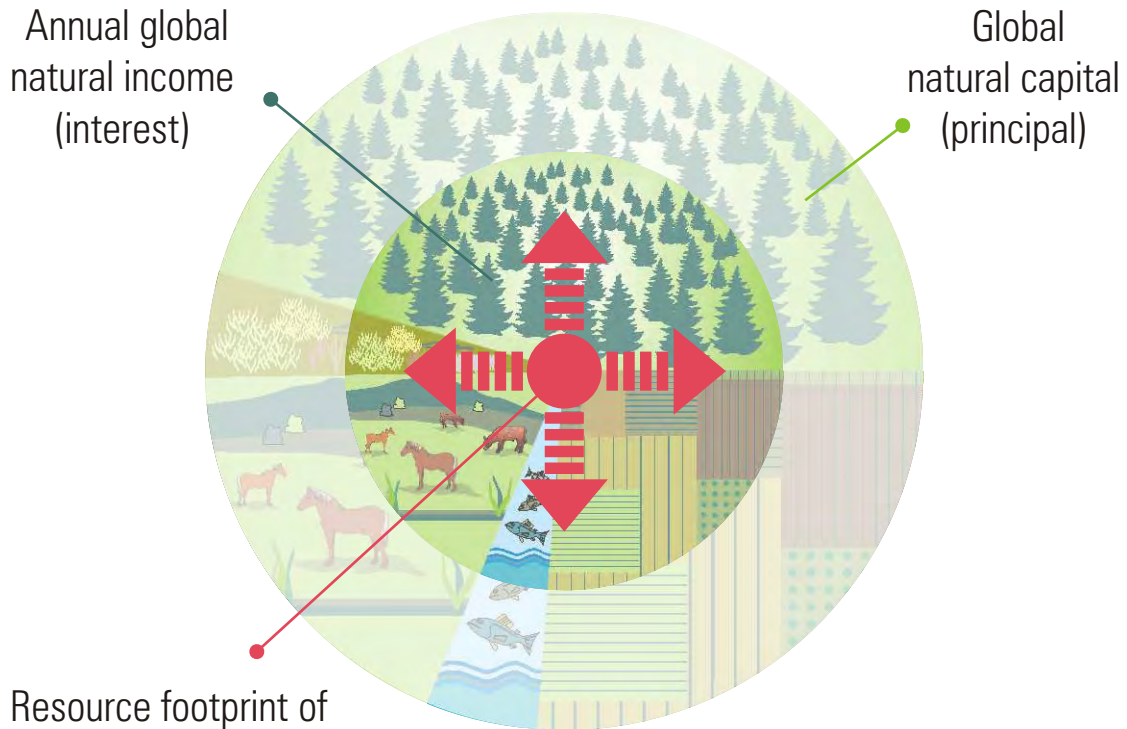
Our health and survival is dependent on the health and survival of the complex ecosystems that support life on our planet. Already we are beginning to witness the cascading collapse of interconnected ecosystems.⁵ As a result the foundations of industrial civilization have also begun to collapse.

Environmental and demographic trends alone indicate that the frequency, severity and scale of crises will escalate over the next two decades. These regional crises will progressively interact with each other to create global crises. A failing world economy will affect increasing numbers of people, who will begin to question the values and institutions of the current world order. At this point humanity will reach a bifurcation point: our unsustainable global civilization will either transform itself into a sustainable global civilization, or it will enter a prolonged period of escalating crises marked by the collapse of vital ecosystems, conflicts over disappearing resources, population decline, political fragmentation, and economic and social regression.

One way or the other the world as we know it will soon end.

In the next sections we will examine three issues: why global industrial civilization is unsustainable; what the requirements are for a sustainable civilization; and how we can help a peaceful and sustainable global civilization evolve out of the coming collapse of our social and natural worlds.

Our expansionist economic model was developed at a time when there were unexplored frontiers and natural resources seemed limitless.



Annual global natural income (interest)

Global natural capital (principal)

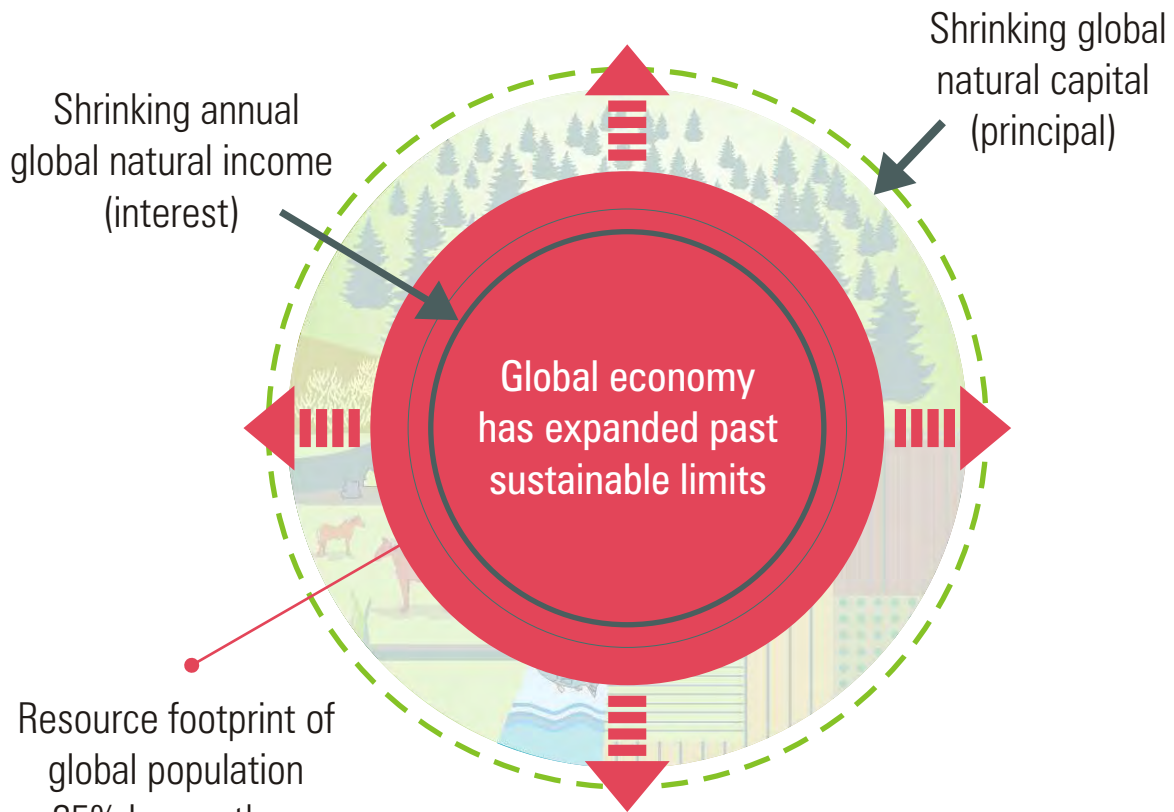
Resource footprint of global population smaller than annual available resources
sustainable

1750 C.E.

World population approx. 800 million
Agrarian civilizations still dominant
Beginning of Industrial Age

Diagram not to scale

Globalization marks the end of unexplored terrestrial frontiers. An economic system based on limitless growth is no longer viable.



Resource footprint of global population 25% larger than annual natural income
unsustainable

2006 C.E.

World population 6.5 billion
Global industrial economy
Consumer culture

Social systems are dependent on biophysical systems

The long-term viability of human societies is utterly dependent on the long-term viability of the biophysical systems that support them. Consequently, the long-term sustainability of human systems requires the maintenance and restoration of ecosystem integrity, resilience, and biodiversity. Industrial economies are unsustainable because they are based on a mechanistic worldview: reality is made up of discrete objects rather than interrelated systems. As a result they convert “natural capital” into manufactured and financial capital without taking into account environmental costs. [Diagram 3]

Industrial civilization will continue to destroy its own life support systems because its economic system is based upon continuous material growth, and continuous material growth involves the constant degradation of biophysical systems.

Driving our unsustainable global economy is an unsustainable culture. The consumer culture creates false needs for power, status and wealth instead of satisfying real needs for meaning, community and survival. Consumer society creates the illusion of scarcity in the rich world, where people try to satisfy their emotional and spiritual needs through consuming things, and real scarcity in the poor world, where the resources do not exist to meet basic human needs for food, shelter, health and education.

Because real human needs cannot be satisfied by a consumer culture, people will never feel that they have enough and there will never be an end to the destruction of the environment. However, our most basic need is to survive, and without a liveable environment we will not survive. A culture based on greed is not just morally wrong, it is unsustainable.

Technological solutions can't fix social problems

Every developing country in the world is counting on technological breakthroughs and increased production to provide them with the standards of living of industrialized countries. It can't be done. The resources of four more Planet Earths would be needed for everyone on the planet to have an American life style. [Diagram 4] Despite this fact, in almost every country advertising is urging people to live like Americans. The people of the world are being sold an impossible dream.

Although modern industrial development has improved the living standards of much of the world's population, all further plans for meeting the needs of humanity through increasing the consumption of natural resources are unrealistic, given that the carrying capacity of the biosphere is already in decline. In the coming decades the global economy will have not

Orthodox economics dismisses social and environmental costs as “externalities”. This means that values such as health and well-being are not included in economic modelling, planning or accounting.



Will Economists Realize that Fresh Air and Water Have Value?

Money is not the real bottom line.

more but fewer resources at its disposal. [Diagram 5] It will not be enough to reduce the rate of destructive growth if we wish to avoid the total collapse of human civilization: the process of destruction has to be reversed and the environment restored.

Moreover, in order to meet the minimal needs of a growing global population, resources will have to be redistributed. Ecosystems will only be preserved when humans enjoy peace and basic prosperity, since desperately poor people are often compelled to scavenge their environments and fight over scarce resources in their efforts to survive. It will not be possible to create a sustainable planet unless the disparities between rich and poor are greatly reduced. However, at present global inequality is steadily increasing.⁶

Many people hoped that the introduction of information technologies would reduce the need for natural resources and human labour. Instead profits have been increased through increasing the intensity of production. Smokestack industries have not disappeared; they have simply been transferred from high-wage to low-wage countries.

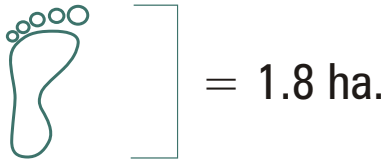
New technologies may delay the collapse of industrial civilization, but they will not prevent it. While technological advances will reduce waste and improve efficiencies, they will not change the values and social structures that promote unsustainable exploitation, inequality, greed, and war.

Our unsustainable global civilization cannot be made sustainable

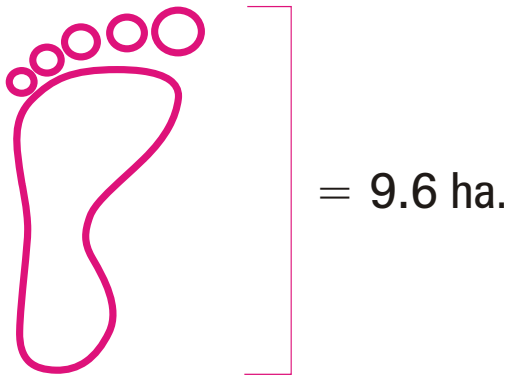
It will be argued that the collapse of contemporary civilization will not happen because governments and businesses will eventually act to avert the developing crises. The reality is that the politicians and business leaders that govern our world will not and can not reallocate the resources of their countries and corporations in order to develop a peaceful, equitable and sustainable civilization.

All the material resources and scientific knowledge needed to resolve the major problems on the planet have been available for decades, but the will to change the political and economic priorities of society has not. As a result increasing global wealth has been accompanied by increasing global poverty. Although many leaders have good intentions, their efforts to implement change are constrained by the existing system, whose worldview, values and structures oppose the development of new priorities such as the reduction of consumption and the redistribution of wealth.

We can be certain that politicians and business leaders will increasingly respond to the collapse of vital ecosystems and the rising cost of scarce resources through implementing policies for “sustainable development”. However, to date most of these policies have been designed to sustain growth (quantitative expansion) rather than to develop sustainability (qualitative transformation). Attempts to adjust the existing system without making fundamental changes will not work because all growth-based development is ultimately



Each person's fair **earthshare** in 2003.



The average footprint of **U.S. citizens** in 2003.



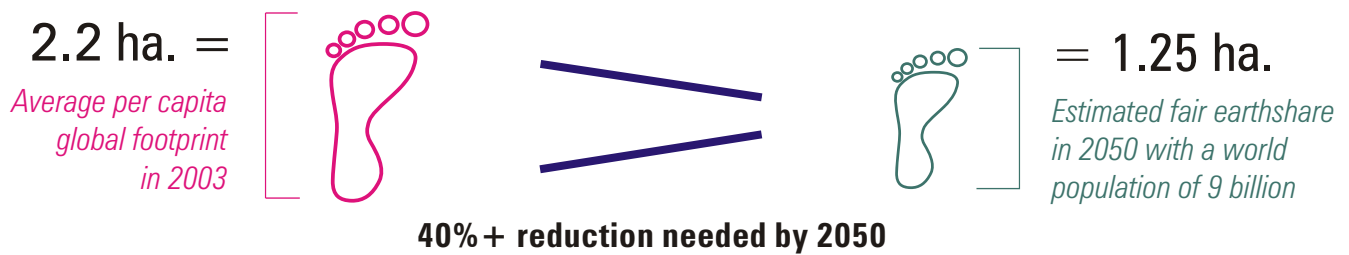
Human economies will only survive over the long-term if they are able to function within the carrying capacity of planet Earth.

The resources of 4 more planets would be needed for everyone in the world to live like Americans. The globalization of the American consumer society is not possible.



The annual per capita ecological deficit was approximately 25% in 2003.

The global per capita footprint needs to be reduced now if human economies are to be sustainable.



However, average per capita footprints are increasing each year, not decreasing.

unsustainable.⁷

Humanity has no choice: if global civilization is to survive, it must evolve into a completely new type of societal system. A consumer society cannot be transformed into a conserver society without structural change.

A civilization will only be sustainable if it can satisfy humanity's real needs

In the 1987 Brundtland Report, sustainability was defined as the ability to meet the present needs of humanity without compromising the ability of future generations to meet their own needs.⁸ Sustainable development has also been defined as improving the quality of human life while living within the carrying capacity of supporting ecosystems.⁹ Human needs are more than simply material needs for food, shelter and safety: they are also needs for health and wholeness, for meaning and belonging, for relationship to one's community and biophysical context.

Advertising sells the illusion that qualitative needs can be satisfied by quantitative consumption. Because most emotional and spiritual needs cannot be met by acquiring things, people continue to consume in vain efforts to find comfort and satisfaction.

For this reason industrial civilization is not only environmentally unsustainable but socially unsustainable: it creates emotional scarcity in the overdeveloped world and material scarcity in the underdeveloped world. In the rich world mental illnesses and addictions are widespread, and communities and families are fragile. Globally, rich nations are plagued by obesity while poor nations are plagued by hunger; more research is done on developing cosmetics for the rich than on discovering cures for the diseases of the poor; and many of the best scientists are developing new weapons for countries that can already destroy all life on the planet.

The self-destructive behaviours of industrial civilization prevent it from meeting real needs. Complex human societies will only survive if the current unsustainable economy, which is based on the maintenance of emotional scarcity and unhealthy addictions, is replaced with a sustainable economy based on the maintenance of social, physical and biophysical health and wholeness.

Human society will only be able to end scarcity, and international competition over limited resources, when it is able to satisfy the minimal physical, emotional, mental, and spiritual needs of all the humans on the planet. This means that we need to replace an unsustainable system that is designed to increase the quantity of things, with a sustainable system that is designed to improve the quality of people's lives. And, in turn, because basic human rights and a quality of life cannot be achieved in a degraded and toxic environment, these goals will only be met by also meeting the needs of the planet's biophysical systems and

protecting their millions of life forms.

Human needs include needs for community, meaning, identity, and justice

As industrial civilization expands, it consumes and degrades not only natural resources, but also other civilizations and cultures. When it comes in contact with traditional agrarian or tribal societies, the force and attraction of its superior power and wealth begin to break down the economies, values, and social institutions of the older societies. Rapid urbanization has been accompanied by soaring rates of poverty, crime, and addiction. While industrial civilization has provided personal freedom to more people than ever before, the price has often been the loss of community and meaning.

Identity and resource conflicts only occur when people believe that their needs are not being met or are being threatened. People compete and fight over material goods when they fear material scarcity, and people compete and fight over religious, ethnic and national issues when they fear the loss of cultural identities.

Industrial civilization perpetuates conflict by perpetuating fear and alienation: it pits the individual good against the common good and material needs against emotional needs. In order to eliminate war and preserve the environment, a sustainable global system will have to meet the full range of human spiritual, social, material, and biophysical needs, including our needs for meaning, identity, and justice. While current social structures facilitate competition, inequality, injustice, and conflict, sustainable structures will need to facilitate cooperation, equality, justice, and peaceful conflict resolution.

A sustainable global civilization must value interdependence and diversity

Two mass extinctions are taking place on our planet. Our current civilization is not only destroying species, it is also destroying cultures. There were 6000 languages spoken on Earth in the year 2000. Half of these will have disappeared by 2050.¹⁰ With the extinction of each ancient culture, humanity will lose a unique perspective along with knowledge accumulated over thousands of years.

Individual species risk extinction when they lose critical habitat and genetic diversity, and with these the ability to adapt to environmental stressors. Since human knowledge and behaviours are primarily transmitted through culture rather than genes, the loss of cultural diversity similarly threatens the survival of complex societies.

Not only are healthy species genetically diverse, but healthy ecosystems are composed of a wide variety of interdependent species. The diversity increases the system's resilience, which is its ability to manage fluctuations and change. Systemic resilience is lost with the

destruction of both human cultural diversity as well as ecosystem biodiversity, increasing the likelihood of widespread social and biophysical collapse.¹¹

The cultural requirements of a sustainable global societal system are similar to the biological requirements of a sustainable ecosystem: values and institutions must foster wholeness, interdependence, diversity, and resilience. [Diagram 6]

Industrial civilization globalizes inequality and concentrates power at the expense of local autonomy, community, and diversity. As the many varieties of human civilizations and societies become undifferentiated parts of an expanding societal monoculture, the system loses checks and balances. The result is an increasingly closely connected but unstable world system: new crises can rapidly spread throughout the system's political and economic structures. Over the next decades the number and complexity of large crises will grow, eventually producing uncontrollable fluctuations and potential system failure.

Viable societies will require more efficient and less bureaucratic social structures

In the past many successful societies have expanded to the point where their resources could no longer maintain their increasingly complex social structures. When easily accessed resources were exhausted, they were forced to seek out ever more distant and expensive resources. Eventually the political, economic, and military cost of acquiring new resources reached an unsustainable point and the societies collapsed. Our industrial civilization, with its bureaucratic structures and expansionist economy, is following the same unsustainable trajectory of other great civilizations.¹²

The majority of industrial countries are democratic and capitalist to varying degrees. However, whether they have democratic or totalitarian governments and market or planned economies, all industrial societies are composed of interconnected layers of centralized structures supported by large regulatory institutions. These bureaucratic structures are necessary because industrial society is a system of minority rule.

The competing nations, institutions, and corporations in industrial societies have social structures that distribute power and wealth unevenly within and between countries. Elites in every country and institution collect information, make decisions, and then enforce compliance through regulations and sanctions. Because this societal system is based on inequality, it can only be maintained through complex financial and regulatory bureaucracies and repressive military, police, and judicial systems.

In order to meet the real needs of humanity in a sustainable fashion, human societies must eliminate unnecessary waste, including the enormous cost of regulation and repression. Currently much of the world's economy is engaged in unproductive activities connected with the control of power and wealth. A sustainable economy will have to reallocate human and natural resources away from socially dysfunctional activities and towards activities that

Clearcut forest in British Columbia



Degradation
Degradation
Degradation

Collapse
Collapse
Collapse

Without wholeness and health ecosystems can be irreversibly damaged

Diagram 6

promote health and wholeness.

Although a sustainable global societal system will be more advanced (i.e. more differentiated and complex) than industrial civilization, it will not be able to support larger bureaucratic structures. If complex societies are to survive, humanity must develop new economic structures that utilize energy and resources more efficiently, and new political structures that more efficiently process information and allocate tasks and resources.

Sustainable societies must be decentralized and self-regulating

Industrial civilization has an inefficient structure because the parts of its social network are unequally connected. The concentration of information and decision-making at a few powerful centres creates bottlenecks in which critical parts of the social network are overloaded while most of the system is underutilized. At present the creative potential of most of humanity is wasted.

The practical alternative to centralized decision-making is decentralized decision-making. In order to function more efficiently, political and economic structures will have to be transformed from being primarily centralized to being primarily decentralized, and from being primarily focused on the production of quantities of goods for trade to being primarily focused on improving the local quality of life.

An appropriately decentralized network can improve efficiency by giving all its parts the ability to respond flexibly and autonomously to local conditions. The need for energy and resources can be reduced by having most social and environmental needs met at the local level with local resources.¹³

Although most needs can be met at a local level, not all functions can or should be devolved: for example, regional issues need to be dealt with at a regional level and global issues need to be dealt with at a global level. Indeed, national and international environmental and human rights standards are necessary as buffers to guard against any infringement of these rights at the local or regional levels. A decentralized network will require a holarchical structure that supports the appropriate distribution of power and resources and the appropriate self-regulation of each node and level.

In reality we have not yet made the transition from an industrial economy to an information economy. The world is still dominated by mechanistic – not systemic – values and structures. The principal use for new technologies has been and will be to reinforce existing unsustainable political and economic institutions. Information technologies will not become an integral part of a new societal system until sustainable holarchical social structures begin to form in the midst of the collapse of industrial civilization.

Sustainable societies require integral worldviews

Most national governments have highly centralized forms of political decision making. These not only restrict access to information, power and resources, but also make it difficult for most people to participate in political and economic decision-making. Although most industrial countries are democracies, most people have little say in the day-to-day decisions made in their workplaces or communities.

To the extent that people can participate in the political process, many do not because they are poorly informed and motivated. A major cause of public apathy is that knowledge in industrial civilization is fragmented, specialized, and controlled. Life in the consumer society is morally and intellectually contradictory, and this confusion is corrosive and disempowering. Because the consumer worldview represents the commodification of both humans and the natural world, it promotes the illusion of a separate self that exists independently of both the larger human and biophysical communities.¹⁴ On the other hand, more local and decentralized communities help to foster a greater sense of caring both for other humans and for the local environment.¹⁵

However, a decentralized societal network will only function if every part at every level is capable of appropriate self-regulation and self-organization. Self-regulation is only possible if the system gives all its parts the ability to control their own lives, communities, and natural environments.

People and communities will need greater access to the theoretical and practical tools required for self-direction, self-regulation, self-organization, and constructive action. For this to occur, the dominant industrial model must give way to an integral model that recognizes the inextricable interconnectedness of both human and biophysical systems and the environmental limitations placed on human activities. A fragmenting worldview must be replaced with an integrating worldview, since people can only control their lives when their understanding of reality permits them to act effectively in the real world.

A sustainable society will need values and social structures that support the relatively egalitarian distribution of power, information and resources to every part of the system. The shift from a primarily centralized societal system to a primarily decentralized societal system is the shift from partial democracy to participatory democracy.

Entering the bifurcation: civilization will either collapse or transform

There are only three possibilities for the future of civilization:

(a) Cascading environmental crises will rapidly escalate, producing uncontrollable economic and political crises. At some point these crises will cause the catastrophic collapse of the societal system. This process may produce irreversible damage to social and biophysical

systems.

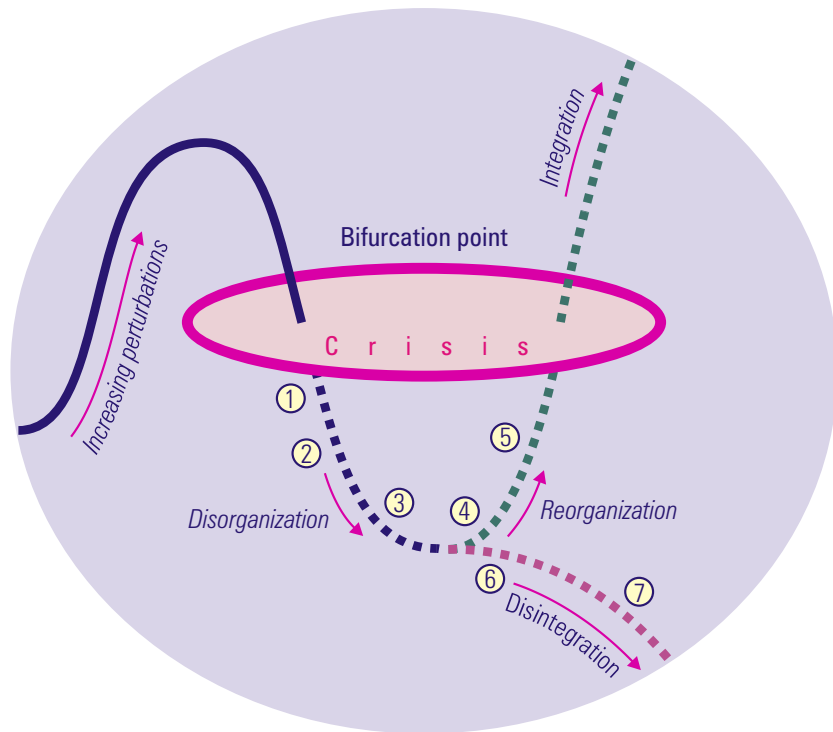
(b) Political and business leaders will proactively respond to the growing crises through supporting environmentally friendly technologies, introducing policies for sustainable development and preventing political unrest. These efforts will slow the rate of environmental destruction and help to extend the life of industrial civilization. However, attempts to improve the system without redesigning its unsustainable structure will ultimately fail. Over time efforts to manage crises will consume more and more scarce resources and industrial civilization will collapse.

(c) As regional and global crises increase and the world economy begins to fail, the ability of existing political and economic structures to influence and control people will weaken. Growing numbers of people will question the values of contemporary civilization and start to organize alternative structures. Maintaining and restoring large areas of the earth's biosphere will become an international priority. At this point a successful transformation to a sustainable societal system is possible if new values and technologies have already developed an appropriate worldview – one capable of organizing functional new social structures. Should this happen, the collapse of contemporary civilization will become a springboard for the evolution of a sustainable civilization.

The B.E.S.T. (Biosocial Evolutionary Systems Theory) model suggests that we are beginning a period of major societal and biophysical transformation. [Diagram 7] Since World War II there has been a dramatic accumulation and concentration of wealth as well as the rapid conversion of natural capital to manufactured capital. With this has also come the emergence of greater vulnerability, due to the increasing number of interconnections that link that wealth and those that control and maintain it. This growing connectedness leads to increasing rigidity and brittleness as the system becomes ever more tightly bound together. This has reduced resilience and the capacity of the system to absorb change, thus increasing the threat of abrupt change.

As we enter the backloop of reorganization, we shall witness a collapse of existing structures and accumulated connections, and the release of bound-up knowledge and capital.¹⁶ On the one hand, this collapse will inevitably initiate a reversion to “lower” levels of response in the form of “blood and belonging” and “us/them” forms of fear-based security reactions.

On the other hand, the creative aspect of this backloop destruction is bound up with the release of knowledge and the appearance of new or latent elements which can then be re-associated in novel and unexpected ways to trigger re-growth and reorganization into fundamentally new forms of learning and innovative social patterns.



The springboard effect helps systems reorganize

- ① People lose faith in the industrial system as crises worsen
- ② Human and economic resources are released from the system
- ③ Support increases for both inclusive (sustainable) and exclusive (ethnocentric) solutions
- ④ If sustainable solutions are supported, constructive reorganization begins
- ⑤ The reorganization of the global system accelerates
- or
- ⑥ If ethnocentric values and structures dominate, conflicts over scarce resources intensify
- ⑦ Global civilization disintegrates

The emergence of an integral worldview is critical for the creation of a sustainable societal system

For the first time in history, humanity shares a common concern: industrial civilization will not survive a catastrophic collapse of our environment. As a result, humanity shares a common challenge: to ensure that the emerging elements of a sustainable global system are sufficiently coherent and self-organized to be able to successfully transform the existing system and prevent catastrophic collapse.

Evolution is an unpredictable process that involves the emergence of previously unknown properties that take hold and spread because they are more relevant and functional than previously existing attributes.¹⁷ While we know that industrial civilization is no longer viable, we do not know all the new properties that will evolve during the transformation of the current system to a sustainable global system. We can be sure that the process of transformation cannot be dictated by any centre: evolution is an organic process and a sustainable, decentralized, and empowered societal system can only develop in a process of self-creation and auto-organization.

A new paradigm began to develop over a hundred years ago with the discovery of force fields and relativity theory. Important emerging elements of the new integrative society are now everywhere. Some examples are quantum mechanics, computer networks, feminism, ecology, conflict resolution, the peace movement, non-governmental organizations and the International Criminal Court.

However, the emerging property that will be critical for the creation of a sustainable global societal system is an integral worldview, as it will provide the organizing pattern around which sustainable social institutions can be formed. [Diagram 8] The articulation of this holonic, systems-based worldview will assist with the development and integration of emerging theories, values, and organizations. Many people have contributed to the science behind an integral worldview;¹⁸ we are writing this article in order to help it emerge as a coherent perspective.

Peaceful transformation will only occur if the new structures include and transcend the old

The process of changing global values and structures will inevitably be difficult, uneven, and protracted. The driving forces behind change will be, on the one hand, increasing resource shortages and collapsing ecosystems, and, on the other, the emergence of sustainable technologies and an integral worldview. Different ethnopolitical groups and organizations will support or oppose change depending on their values, interests, and understandings.

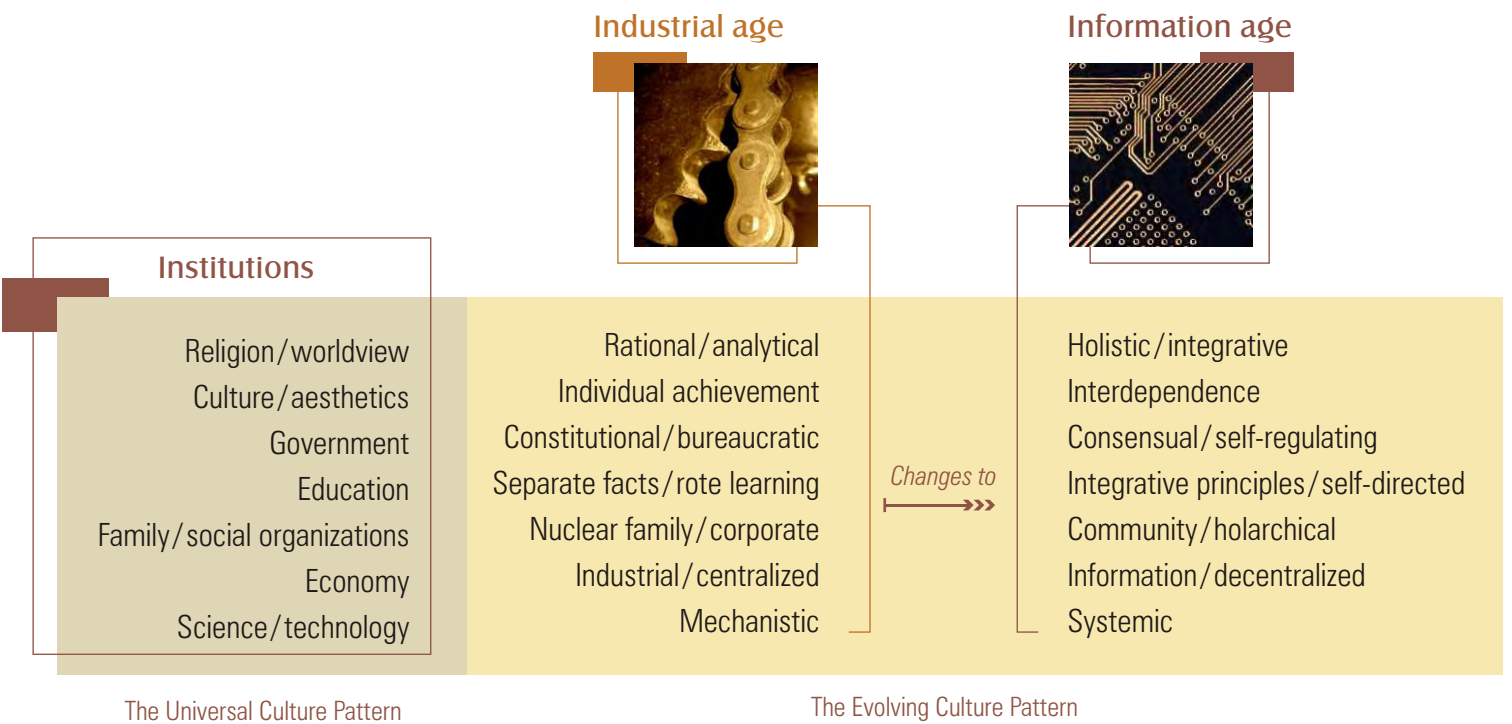


Diagram 8

In order to make a successful transformation to a viable global system we must educate people about our common need: if we wish to survive, all human societies must become sustainable. The key to successful conflict resolution is maximizing cooperation around common interests while minimizing competition over scarce resources and differing values.¹⁹

Resistance to change occurs when people believe that they have more to lose than to gain. The expansion of industrial society is still being resisted by many agrarian and pre-agrarian societies because they fear the loss of meaning and community. A successful transformation to a sustainable civilization must include and transcend older societal systems through retaining the positive aspects of the older societies while meeting a wider range of needs. Although ruling elites and societal inertia will inevitably oppose change, much opposition can be avoided through promoting values of diversity and inclusiveness.

The cure for a dying planet cannot be the replacement of one monoculture by another; we need instead to create a global system that promotes and protects both cultural diversity and biodiversity. In order to support resilience, a viable global system should include a variety of sustainable societal systems from the simple (e.g., hunter-gatherer economies) to the complex (e.g., information-based economies).

Organizing for change

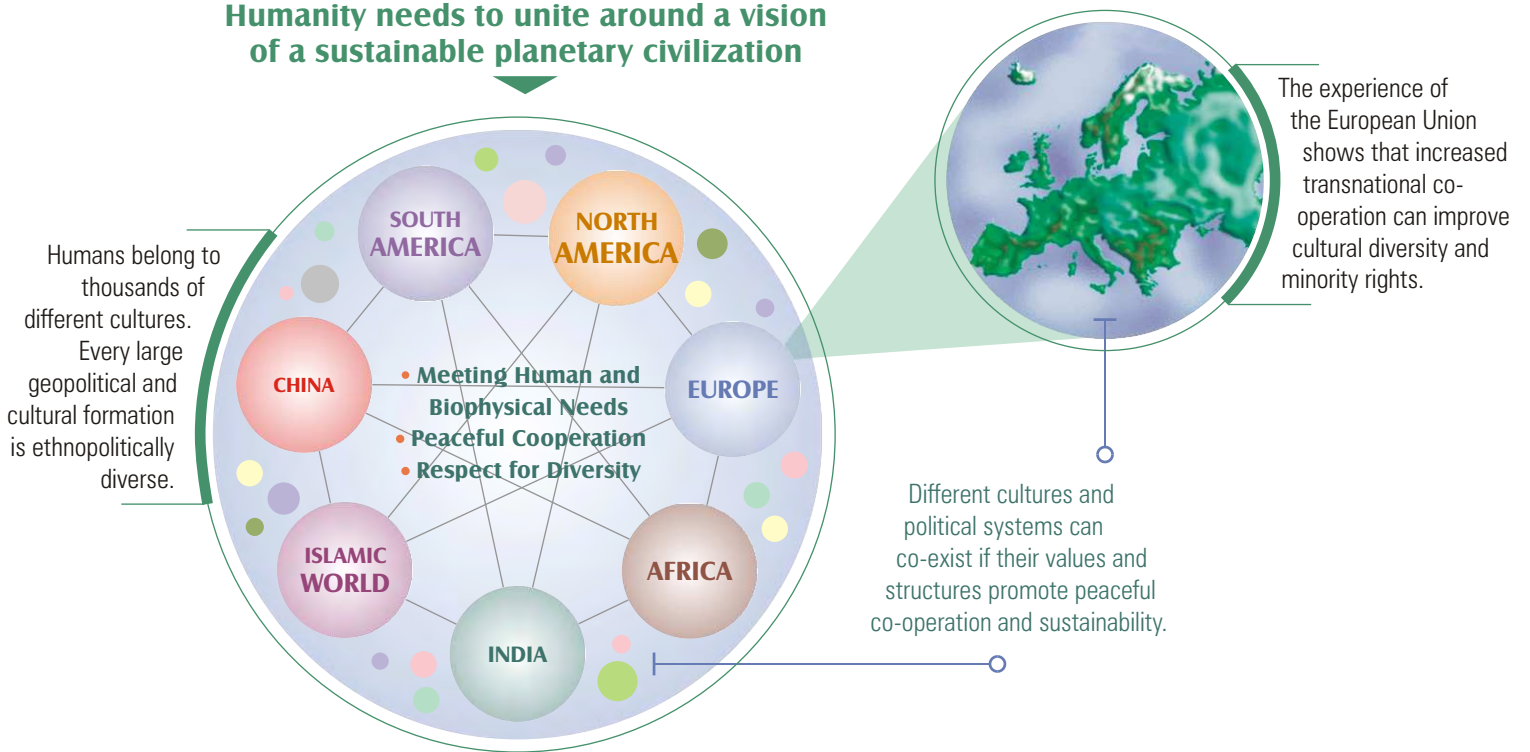
People in every country need to know that while systemic change is inevitable, destructive outcomes are not. Positive change is possible if concerned people unite around a common vision of a peaceful and sustainable planet. The Earth Charter calls for international agreement to “help build a sustainable world based on respect for nature, universal human rights, economic justice and a culture of peace.”²⁰

A global movement needs to be mobilized to secure international agreements on the following points:

- (1) Because our planet has finite resources, there are limits to growth. If the global economy continues to exceed sustainable limits it will destroy its biophysical foundations and collapse.
- (2) Our collective survival depends on human economies becoming sustainable.
- (3) Essential human and biophysical needs must be met in order for human economies to be sustainable.
- (4) Resources must be redistributed to meet essential human and biophysical needs.
- (5) Cultural and genetic diversity is essential for health and wholeness.
- (6) In order for different cultures and societal systems to coexist, their values and structures must promote peaceful co-operation and sustainability. [Diagram 9]

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Humanity needs to unite around a vision of a sustainable planetary civilization



Values based on *The Earth Charter (2000)*

Diagram 9

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