

# JAPANESE CREATIVITY AND SUSTAINABLE DEVELOPMENT

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“I tried to make the water flow where I thought it should and force the dirt to stay where I thought it ought to be. But it didn’t work. How could it? Water’s water, dirt’s dirt. I can’t change their nature. What I’ve got to do is learn to be a servant to the water and a protector of the land.”

YOSHIKAWA, Eiji, *Musashi*, Tokyo: Kodansha, p.663

## INTRODUCTION

“Sustainable development” has become a subject of many academic discourses as well as a topic of intense policy debates since the World Commission on Environment and Development challenged the world community to address the interlocking crisis of the world economy and the global environment with its 1987 report, *Our Common Future* (World Commission, 1987). This does not mean that academicians and policy-makers had been unaware of the environmental impact of economic activity before that; the 1972 report by the Club of Rome, *The Limits to Growth*, had already sounded a highly publicized warning against an unbridled pursuit of economic growth in the face of natural resource constraints (Meadows, 1972). What *Our Common Future* did was merely to remind academicians and policy-makers of the need to turn their immediate attention to resolving the conflict between economics and ecology by presenting the mounting evidence of environmental degradation brought about by the universal pursuit of economic growth by developed as well as developing nations. Whether the attention sustainable development attracts today represents a passing fad or a sustained commitment, the question of how nations can redirect their efforts from economic growth to sustainable development deserves serious examination in view of the growing awareness that the universal pursuit of higher standards of living by all nations as measured by per capita GNP is incompatible with the Earth’s finite carrying capacity.

With the passing of the *Fundamental Law of the Environment* in November 1993, Japan as a nation officially adopted the policy of promoting sustainable development. This law not only embraces the concept of sustainable development as a guide for policy but it also calls for a reexamination of existing social and economic practices for their effects on the environment. As such, it marks a significant turnaround in economic policy-making in Japan, for the promotion of economic growth has always been the main thrust of economic policy

since the end of World War II.

Whether they are in response to the government's new policy initiative, many efforts are already being made by businesses, communities and citizens' groups to make their activities more "earth-friendly". It is one thing to say, however, that they are committed to promoting sustainable development, but quite another whether their ideas and practices, creative as they may appear, are truly conducive to sustainable development. What we propose to do in this discussion is, first, to review the meaning of "creativity" as it is exhibited in the conduct of economic life by the Japanese and, then, to examine whether "Japanese creativity" shows promise of becoming the new guiding spirit of economic development which cherishes the value of maintaining harmony between human activities and the natural process.

### THREE I'S OF JAPANESE CREATIVITY

The Japanese have been remarkably successful in pushing economic growth with their export-driven economy in the post-World War II era of economic miracle. Despite their success, they have often been accused of being imitators and only good at transforming original inventions made by foreigners into successful commercial products (Prestowitz, 1989). There is no doubt some truth to these accusations, for such products as the camera, the watch, and the automobile were all invented abroad before the Japanese have turned them into enormously successful exports for their economy. However, the fact of the matter is that the Japanese are a "creative" people, albeit in a somewhat different sense of the term from the way the people in different cultures are (Koizumi, 1982). For, it certainly takes creativity to come up with those successful products which are associated with names such as Nikon, Seiko, and Toyota.

While many examples can be cited from the nation's earlier history, Japanese creativity which has become prominent, especially in the post-World War II era of economic miracle, can be summarized by three terms: "interaction", "integration" and "incrementalism". By "interaction" is meant the interactive manner in which the Japanese go about cultivating new products (Maruyama, 1989). By "integration" is meant the way Japanese creativity is exhibited in the integration over several processes in the development of new products rather than in the refining of individual processes accomplished by the division of labor among experts working in specific areas of their expertise. By "incrementalism" is meant the importance the Japanese place on making *kaizen*, or incremental improvements, rather than major breakthroughs (Tsuchiya, 1988).

How "interaction", "integration" and "incrementalism" have evolved into the basic traits of Japanese creativity can be explained by the historical evolution of Japan as a social system. Consider, for example, the history of science and engineering in Japan. While no doubt a late starter in accepting science as a serious human endeavor, Japan was much quicker than nations in the West when it comes to incorporating science and engineering as an integral part of the modern university education (Murakami, 1988). Thus, the traditional

strength in the teaching of the three R's of primary education whose roots go back to Tokugawa Japan has come to be reinforced by the training of the technically literate population in colleges and universities since the Meiji Restoration.

The traditional strength in the teaching of the three R's of reading, writing and arithmetic, in the first place, expands the scope of social interaction among the population. The fact that most of the nation watch the same television programs and read the same newspapers is not to be slighted in view of the growing evidence showing the importance of the informal network of communication (e. g., the QC circle) in raising the productivity of organizations. The discipline demanded in the learning of the three R's in the classroom in which universal achievement rather than individual accomplishment is stressed is also responsible for fostering the work ethic which is needed to perform simple and routine tasks on the factory floor. Then, a high literacy in science and engineering facilitates interaction among scientists and engineers who are engaged in R & D activities. Moreover, the Japanese model of contextual human relationship encourages group efforts to cultivate new products rather than inventions by lone scientists and engineers.

A few examples can be cited from the recent "success" stories in Japanese manufacturing industries to illustrate the importance of "interaction", "integration" and "incrementalism" as the basic traits of Japanese creativity. Seiko's invention of the watch using a quartz electronic resonant circuit is ascribed to the result of "interactive" team effort by the researchers at Seiko who called themselves the "59 Project Team" in honor of the year they embarked on the project (Uchihashi, 1982). Horikawa, an eyeglass frame maker, has achieved its status as the industry leader by "integrating" over the three processes of R & D, production and retailing, with constant feedback of consumer responses to its products into its R & D activities. The television and the video camera, among others, can be mentioned as examples of the importance of "incremental" improvements for the commercial success for such firms as Sony, Sharp, and Panasonic.

## **SUSTAINABLE DEVELOPMENT AS VIABLE TRANSFORMATION**

While the term "sustainable development" is mentioned with increasing frequency in academic discourses and policy debates these days, what the term means is not necessarily clear and is subject to many interpretations. The World Commission on Environment and Development emphasized inter-generational equity in access to the fruits of economic development when it defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission, 1987, p.8). Most economists and politicians find it difficult to dissociate the discussion of economic development from their traditional preoccupation with economic growth and simply define sustainable development as "sustainable economic growth". Other definitions of sustainable development include: "environmentally sound economic progress", "ecologically balanced environmental management" and "maximum life span of the human

species" (Elliot, 1993; Kirdar, 1992). The most widely accepted, however, is the definition of sustainable development as "steady-state in the use of matter-energy in relation to the size of human population" (Daly & Townsend, 1992).

Strictly speaking, even this concept of sustainable development is not sustainable in view of the fundamental laws of thermodynamics (Ehrlich, Ehrlich & Holdren, 1977). What is needed, then, is to go beyond the material conception of sustainable development and to define it in a much broader context of human evolution which includes cultural evolution. For, as Maurice Strong who served as the Secretary General of the 1992 United Nations Conference on Environment and Development held in Rio de Janeiro points out, it is meaningless to talk about sustainable development without at the same time talking about changes in the people's value systems: "[Sustainable development] must be rooted in the culture, the values, the interests and the priorities of the people concerned" (Kirdar, 1992, p.20). In fact, there has been constant interplay between ecological change and cultural evolution throughout human history. We thus propose to discuss sustainable development in the context of the unified space of human evolution consisting of the biosphere, the sociosphere and the psychosphere (Koizumi, 1993).

By the biosphere is meant the space of interaction among natural systems such as plants, animals, rivers, and oceans. It is the space of interaction, in short, between life and matter. Needless to say, we humans are a part of the biosphere as a biological species. By the sociosphere is meant the space of interaction among social systems such as families, groups, organizations, and nations. These social systems perform economic as well as non-economic functions in facilitating social life. The economic aspect of social interaction can be summarily expressed by characterizing the sociosphere as the space of interaction between labor and machine. And by the psychosphere is meant the space of interaction among cultural systems such as languages, symbols, artifacts, myth, and religions. The psychosphere, as the realm of our spiritual life, is the space of interaction between "language" and mind, where "language" is widely interpreted to include symbols, artifacts and other cultural systems.

The unified space of human evolution consisting of the biosphere, the sociosphere and the psychosphere is the subject of inquiry for what might be termed "an integrated science of stewardship" consisting of ecology, economics and ethics, where ecology is defined as the science of the biosphere, economics the science of the sociosphere, and ethics the science of the psychosphere. Developing such an integrated science of stewardship is an imminent task facing academicians if they are to mend the broken circle among ecology, economics and ethics (Bormann & Kellert, 1991).

We are now in a position to define "sustainable development" in reference to the unified space of human evolution just introduced. To be specific, we define sustainable development as the process of "viable transformation" of the global system consisting of the biosphere, the sociosphere and the psychosphere. Ours is thus a more comprehensive conception of sustainable development than those reviewed above in that development is conceived as involving biological, social and cultural transformations. As an operational concept,

sustainable development as viable transformation requires that the use of matter-energy in the biosphere be “minimized” that the potential for labor-machine complementarity in the sociosphere be “maximized”, and that the code of social ethics in the psychosphere be “standardized” at the global level as regards man’s relation to the natural environment.

The requirement of “minimization” in the use of matter-energy in the biosphere applies to renewable as well as non-renewable resources. This means that reusing and recycling of resources must be done to the fullest extent possible, for “economizing” the use of resources is one way to make sure that “the needs of the present do not compromise the ability of future generations to meet their needs”.

The “maximization” of labor-machine complementarity in the sociosphere means, in the first place, that machines and humans must be treated as “complements”, not as “substitutes”. While conventional economics talks about capital-labor substitution, with the introduction of ever-newer machines, as a key to improving the productivity of labor, our economics defined in the context of an integrated science of stewardship requires that machines be used as long as they can be used — by reconditioning them, if needed. This is what we mean by the “maximization” of labor-machine complementarity, for machines are, after all, extensions of human bodies and need to be treated as such. This does not mean that we are negating the possibility of substitution among alternative machines. To the extent that we rely on the price mechanism, the scarcity of a particular machine will push up its price, thereby inducing its users to find its substitutes. What we do negate is the kind of social policy which promotes capital-labor substitution such as the liberal use of tax incentives which encourage depreciation of existing machines while they are still serviceable.

Practicing sustainable development thus requires that the present generation change its behavior in consideration of what its behavior means for the welfare of future generations. The ethical dimension is, therefore, crucial in defining the concept of sustainable development. This is what we mean by the “standardization” of social ethics at the global level. To be specific, the code of good behavior on the part of the present generation in a sustainable society should not be myopic in its relationship with future generations. Neither, for that matter, should it be anthropocentric in its relationship to other things in the natural environment. In short, each generation needs to be accountable to future generations and to the natural environment to make sure that the transformation of the global system be viable biologically, socially and culturally.

“Standardizing” social ethics at the global level is arguably the most challenging task confronting the world community today, for nations of the world hold vastly different views as to what that accountability to future generations and to the natural environment entails. Consider, for example, the population problem whose solution, many regard, is crucial to promoting sustainable development at the global level. Here, however, we are presented with not only vastly different views but also violent confrontations among those who hold different views, as witness the pro-life versus pro-choice clashes in a country such as the United States, or the lengthy debate that took place during the United Nations Conference on Population

and Development held in Cairo, Egypt in September 1994. Whether determining the size of the family is to be treated as a right for individuals, as is argued in the liberal societies of the West, or a moral problem which requires intervention of the ecclesiastic authority, as is argued in Catholic and Islamic societies, there is no question that the population problem needs to be managed at the global level if we are serious about promoting sustainable development.

## JAPANESE CREATIVITY AND SUSTAINABLE DEVELOPMENT

Given that sustainable development is to be interpreted as a viable transformation of the global system, can Japanese creativity contribute to promoting sustainable development? There are many reasons to believe that the answer to this question is likely to be in the affirmative.

Consider, first, the role of "interaction". That "interaction" is employed as a prevailing mode of social transaction among individuals as well as organizations can be explained in terms of the "Japanese model" of social systems (Hamaguchi, 1993). That is, a society in which the role of an individual or an organization is well-defined in relation to a specific social context finds it easier to exploit "interaction" as a way of mobilizing group endeavor. In particular, "interaction" will prove to be a useful mode of operation for cultivating new inventions simply because making new breakthroughs, whether in science and engineering or in business and management, increasingly requires cooperation of many individuals and organizations. It is worth pointing out that advances in communications technologies are quickly transforming the world community into a global network society in which "interaction" among individuals and organizations can be easily established across national borders.

"Integration" as a mode of cultivating new products will become increasingly important simply because resources need to be economized for sustainable development. While cultivating products which are completely new to the markets requires the use of new resources, cultivating new products by integrating over existing processes can be done by reusing and recycling of existing resources. Indeed, the term "vertical integration" will acquire a new meaning as the process by which the products used for one purpose at one stage of production are reprocessed and reused for another purpose at a later stage of production. Japanese businesses have found it easier to promote this type of vertical integration because of their long experience of cooperation among *keiretsu* firms. And the world business community, too, appears to be ready to promote this type of vertical integration, judging from the recent flood of strategic alliances and technical tie-ups among firms from different nations.

Finally, "incrementalism", by definition, represents a conservative approach to utilizing natural resources in the environment. Indeed, "incremental innovation" ought to become the new guiding principle of sustainable development, replacing "creative destruction" which, as

Schumpeter pointed out, has served as the driving force behind market capitalism committed to economic growth (Schumpeter, 1949). While “creative destruction” leads to wasteful exploitation of natural resources, “incremental innovation” incorporates the spirit of economizing in the use of natural resources. As the world community wakes up to the realization that we share the finite and fragile planet called the Earth, the principle of “incremental innovation” may well evolve into the guiding principle of sustainable development at the global level. Indeed, the Japanese did not discover “incrementalism” by chance; it has evolved into a guiding principle of Japanese creativity out of necessity, i. e., the necessity to economize the scarce resource called “space”.

The three I’s of Japanese creativity have emerged as the characteristics of Japanese society in its historical evolution. At the root of all three basic traits of Japanese creativity are the characteristics of the traditional Japanese culture called Shintoism. Shintoism, originating as it did in animism, is a value system which emphasizes the importance of maintaining harmony with nature. As such, the Japanese do not conceive of the individual self as an entity which is distinct and separate from the natural environment. In fact, the conception of nature as an object of scientific inquiry separate from humans had been alien to the Japanese until the introduction of Western science. Instead, nature had been treated as an extension of the individual self which can be comprehended by cultivating “intuition” through practicing various forms of traditional arts (Watsuji, 1935). While Japan’s record on the protection of the environment leaves something to be desired, especially during the high growth periods of 1960s and 70s, the traditional notion about man’s relation to nature is, therefore, one that is conducive to sustainable development. If treating nature as “a system of dead, inert particles moved by external forces” has led us into the current ecological crisis which Carolyn Merchant calls “the death of nature”, then restoring the animistic view of nature as embodied in traditional Japanese culture and in other so-called “primitive” cultures may well be the only hope left for us to resurrect nature as an organic whole which contains humans (Merchant, 1980).

## **RE-EXAMINING THE CONCEPT OF WEALTH**

One reason — and an important one at that — why economic development has been associated with environmental degradation has to do with the fact that the concept of wealth as a measure of human welfare is narrowly defined as income, i. e., Gross National Product, in conventional economics. This preoccupation with wealth as flow has a number of disturbing implications. For example, to the extent that per capita GNP is rising with economic development, it is not necessary to pay attention to what is happening to the environment as human welfare is apparently improving. The problem is aggravated by the fact that the conventional national income accounting does not include the costs economic activity imposes on the environment. The omission of environmental costs — or benefits, for that matter — in the national income accounting explains why inflicting damage to the

environment, like the Exxon Valdez incident, can actually increase GNP. For, while the costs of cleaning up the beaches in Prince William Sound are counted, the damages to the ecosystems there are not counted, in the calculation of GNP.

In order for sustainable development to become accepted and followed as the goal for social policy, it is obvious that the concept of wealth must be redefined so that we can include in it such things as the aesthetic value of the environment and the biodiversity, along with other variables which serve as indicators of human welfare as stock. Some efforts are already being made to rectify the obvious defects of GNP as a measure of human welfare. For example, the United Nations Development Program's "Human Development Index" combines per capita real GDP, adjusted for purchasing power, with life expectancy and literacy in its annual report, which it started to publish in 1990. Daly and Cobb introduced the concept called the "Index of Sustainable Economic Welfare" which combines such economic indicators as personal consumption, capital growth, and value of household labor with a number of environmental indicators such as the costs of congestion, air pollution and soil erosion (Daly & Cobb, 1989). Ekins also discusses other efforts to develop alternative measures of human welfare in what he terms "green economics" (Ekins, 1992).

Commendable and encouraging as these efforts are to introduce alternative measures of human welfare, we still have a long way to go before we can claim to have a set of reliable indicators which can be used as a guide for social policy for sustainable development. However, several indicators which need to be included in that set can be mentioned. Since we have defined sustainable development as "viable transformation" in this discussion, we need to employ a set of "state variables" which indicate how the viability of the biosphere, the sociosphere and the psychosphere is being maintained. As for the viability of the biosphere, we need to include such variables as the biodiversity (or the rate of species extinction), the ratio of forested areas to other land areas, and an indicator of the overall amenity of the environment. As for the sociosphere, we may continue to employ many of the social indicators currently being used by social researchers, including a modified figure of per capita GDP calculated by some type of "green accounting" which takes into account the environmental benefits as well as the costs associated with economic activity. And as for the psychosphere, we need to look at the measures of health, literacy, knowledge, and skills. But more importantly, we need to develop a measure of the people's commitment to sustainable development as embodied in the values they subscribe to and exhibited in their behaviors, for the cultural — or spiritual — side of human evolution will be crucial in bringing about a wholesale change in social institutions which is what is needed if sustainable development is to become a way of life, not just an empty slogan.

## CONCLUSION

While many efforts being made today to make human activities more "earth-friendly" are encouraging, what is most crucial is a change in people's consciousness about what "progress"



means (Gould, 1988). For the last couple of centuries, the people in the industrial part of the world have been driven by the idea that human progress can be defined in terms of improvements in material standards of living. Hence, the whole social system, including the conduct of social policy, has been directed towards promoting economic growth.

Now, there is a growing realization that economic growth in the sense of ever-higher material standards of living, which enlightened captains of industry in Victorian England saw as a road to human perfectibility, is simply an impossibility in the finite universe we inhabit (Hardin, 1993). The idea that there is progress in the sense of increasing material standards of living for successive generations is being replaced by the idea that it is our responsibility as a species not to impose our narrowly conceived notion of progress driven by our myopic view about what constitutes the welfare of humankind if we are to ensure that development be sustainable.

What is being undertaken by the world community is nothing short of revolutionary, just as the emergence of industrialism two centuries ago was a revolutionary event. This is why "creativity" is crucial for promoting sustainable development. Moreover, the cultivation and nurturing of "creativity" conducive to sustainable development must be done in the context of the transformation of the global system which is taking place around us. After all, a change in our consciousness about development and environment is a part of the evolutionary process of the global system consisting of the biosphere, the sociosphere and the psychosphere. The World Commission on Environment and Development well recognized this interaction between economic development and cultural change when it stated: "People are a creative resource, and this creativity is an asset societies must tap. To nurture and enhance that asset, people's physical well-being must be improved through better nutrition, health care, and so on. . . . All this has to be achieved through access to and participation in the process of sustainable development" (World Commission, 1987, pp.108-109).

## REFERENCES

- Bormann, E. Herbert, and Stephen R. Kellert (eds.), *Ecology, Economics, Ethics: The Broken Circle*, New Haven: Yale University Press, 1991.
- Daly, Herman E., and John B. Cobb, *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future*, Boston: Beacon Press, 1989.
- Daly, Herman, and Kenneth N. Townsend, *Valuing the Earth: Economics, Ecology, Ethics*, Cambridge: MIT Press, 1992.
- Ehrlich, Paul R., Anne H. Ehrlich, and John P. Holden, *Ecoscience*, San Francisco: W. H. Freeman, 1977.
- Ekins, Paul, *The Gaia Atlas of Green Economics*, New York: Doubleday, 1992.
- Elliot, Jennifer A., *An Introduction to Sustainable Development*, New York: Routledge, 1993.
- Gould, Stephen J., "On Replacing the Idea of Progress with an Operational Notion of Directionality", Nitecki, M. (ed.), *Environmental Progress*, Chicago: University of Chicago Press, 1988.
- Hamaguchi, Eshun, *Nihongata moderu towa nanika? (What is the Japanese Model?)* Tokyo: Shinyosha, 1993.
- Hardin, Garrett, *Living Within Means: Ecology, Economics, and Population Taboos*, New York: Oxford University Press, 1993.
- Kirdar, Uner, (ed.), *Change: Threat or Opportunity?* New York: United Nations, 1992.

- Koizumi, Tetsunori, "Absorption and Adaptation: Japanese Inventiveness in Technological Development", Lundstedt, S.B., and W. Colglazier (eds.), *Nanaging Innovation: The Social Dimensions of Creativity, Invention and Technology*, New York: Pergamon, 1982.
- Koizumi, Tetsunori, *Interdependence and Change in the Global System*, Lanham: University Press of America, 1993.
- Maruyama, Magoroh, "Practical Steps for Interactive Inventions", *Technology Analysis and Strategic Management*, 1(4), 1989.
- Meadows, Donella, et. al., *The Limits to Growth*, New York: Universe Books, 1972.
- Merchant, Carolyn, *The Death of Nature: Women, Ecology and the Scientific Revolution*, San Francisco: Harper & Row, 1980.
- Murakami, Yoichiro, "Japan and the Japanese as Examined Through History of Science", *Japan Update*, Autumn 1988.
- Prestowitz, Clyde V., *Trading Places*, New York: Basic Books, 1989.
- Schumpeter, Joseph A., *The Theory of Economic Development*, Cambridge: Harvard University Press, 1949.
- Tsuchiya, Moriaki, "From Process Innovation to Product Innovation", *The East*, 24(2), August 1988.
- Uchihashi, Katsuto, *Takumi no jidai (The Age of New Craftsmanship)*, Tokyo: Kodansha, 1982.
- Watsuji, Tetsuro, *Fudo — ningengakuteki kosatsu (Climate — An Anthropological Inquiry)*, Tokyo: Iwanami, 1935.
- World Commission on Environment and Development, *Our Common Future*, New York: Oxford University Press, 1987.