Establishment of an Ecologically Sustainable Society by means of Fusion in GAIA Thought and Traditional Japanese Culture

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Abstract:
1. Basic resolution of environmental problems need a change of paradigm.
2. In order to form a closed system and sustainable society, Japanese culture and civilization of EDO period (beauty of self-control) must be considered.
3. Quality technology of Japan is leading the world in environmental resolution.
4. Many Japanese forget the traditional spirit (the original fail is in education).
5. The combination of beauty and technology is a characteristics of Japanese Goods.
6. The origin of Japanese religion (ethos) is Japanese language and Situation of Japan.
7. The global aspects of closed earth system was showed.
8. Practical examples of closed system, Biomass Applications, PVC recycling, poly-diamond synthesis are shown.

Keywords: Sustainable society, EDO period, Quality technologies, Closed system

1. INTRODUCTION
TRILEMMA STRUCTURE OF CIVILIZATION (WORLD TREND TO FINAL CRISIS)

This well-known figure shows the Trilemma, which composes of three factors conflicting with one another. Human civilization is facing difficult problems in this century, which are shown in this figure. In this paper, some solutions to these problems are suggested.

Fig. 1. Structure of Trilemma

2. COMPARISONS OF CHARACTERISTICS BETWEEN JAPAN AND CONTINENTAL COUNTRIES
Most experts agree that the ancestors of the Japanese people migrated to the Japanese archipelago through the Korean peninsula or from the South China Sea and so on. They came to Japan by many different routes. I have a
notion that true “native Japanese” are very few nowadays. Several different ethnic groups interbred to give birth to the race we call Japanese today. Japan has special characteristics compared to those of other countries. One of them is the existence of the Ten-no family which continues to exist in Japan for over a thousand years.

According to the Japanese myth, the Ten-no family are descendants of God who descended from the sky. So Ten-no were considered to be combined with God in the myth. Most Japanese believed in Ten-no as God until the end of the world wars and were taught that they were children of the Ten-no. Japan was, therefore, considered to be a country based on the big one family.

Japan is a virtually homogeneous country. The reason why Japan has remained as such is caused probably by its location, which is isolated in the remote region from the continent and its historical background, namely, that the country has never been invaded or controlled by another country. The Japanese are apt to accept foreign culture, religion and technology easily. The arts and technology imported from foreign countries had been selected as “practical usefulness” for Japan, and accordingly, Japan digested this foreign culture and gradually changed them to adapt to the Japanese way. The Japanese excel at assimilating and improving foreign ideas and culture. The Japanese writing composition was developed in mixture of ideogram (Chinese characters) and phonetic symbols (original Japanese). And many words of foreign origin came into use in Japanese. Shabon or soap (Portuguese,) Botan or Button (Portuguese,) Pan or Bread (Portuguese,) Tabako or Tobacco (Spanish) and so on. One of the other aspects that Japanese had felt little strange was to adopt the good parts of the foreign things easily. Religion such as Buddhism, Confucianism, Lamaism, Christianity, Zoroastrianism, etc, being adopted among the Japanese, but slightly morphed to fit neatly into Japanese culture, is a typical example of this assimilation phenomenon. The Japanese didn’t like strict commandments imposed on

Table 1. Comparison of Characteristics of Japan and Continent.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Japan</th>
<th>Continent (Jewish &amp; Christianity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate: Climate</td>
<td>Isolated Island Monsoon, overabundance of rainfall</td>
<td>Continent West coast, Mediterranean climate Little rain</td>
</tr>
<tr>
<td>Ecology: Ecology</td>
<td>Multi-bio system, monsoon area</td>
<td>Simple-bio system, a long dry season</td>
</tr>
<tr>
<td>Food: Food</td>
<td>Cereals, God is one of agriculture (rice god, Tennoh is a top priest for rice god), Planted food (main) and seafood by-food</td>
<td>Meat, livestock farming (agriculture is a following honored Abel and expelled Cain, Animal food (main) and wheat powder (by-food)</td>
</tr>
<tr>
<td>Temperament: Temperament</td>
<td>Mild, Passive, Harmony</td>
<td>Violent, Active, Independent</td>
</tr>
<tr>
<td>Constitution: Constitution</td>
<td>Endurance type, Low blood pressure</td>
<td>Personality and momentary, Active high blood pressure</td>
</tr>
<tr>
<td>Style: Style</td>
<td>Long-trunk and short leg, Small body</td>
<td>Tall and long leg, Large body</td>
</tr>
<tr>
<td>Action range: Action range</td>
<td>Limited space border making</td>
<td>Non-limited extension of border</td>
</tr>
<tr>
<td>Group mind: Group mind</td>
<td>Conservatism</td>
<td>Progress and development</td>
</tr>
<tr>
<td>Temperament: Temperament</td>
<td>Control of ambition (patience and perseverance: self-negation, trust each other (human relation is most important)</td>
<td>Affirmation of ambition and egoism, Contract of God (predetermination of destiny by absolute God)</td>
</tr>
<tr>
<td>Language: Language</td>
<td>Vowel type</td>
<td>Consonant type</td>
</tr>
<tr>
<td>Cerebral membrane: Cerebral membrane</td>
<td>Left cerebrum type (language sound part and natural sound are accepted by this part: every natural thing has mind)</td>
<td>Right cerebrum type (natural sound is accepted by this part)</td>
</tr>
<tr>
<td>Religion: Religion</td>
<td>Pantheistic (from brain structure)</td>
<td>Absolute God (God decides every destiny)</td>
</tr>
<tr>
<td>Civilization: Civilization</td>
<td>Uni-proportional type (agriculture, equalize, quality)</td>
<td>Proportional type (cavalry system: human ability, freedom and independence, quantity)</td>
</tr>
</tbody>
</table>

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them, but when the religion was slightly altered to fit better within a Japanese mindset, the commandments were gradually adopted among the Japanese.

For example, Buddhism has survived by making many sects so that they could be adopted by Japanese from time to time. Another characteristic in Japanese administration and social system was a juxtaposition of power and authority, which supplemented what they lacked each other. The Power that governed the country and the authority that needed aids from the power coexisted and helped each other in those periods. The juxtaposition of Power and authority has been in practice since Kamakura period approximately 800 years ago. And merchants had also begun to take economic power as those two powers appeared. The groups that reigned over the country were “Samurai”, while the groups that had authority was Ten-no and, finally, the group that had economic power was the merchant class. They supplemented one another and coexisted for hundreds of years. The merchant’s economic power exploded in Edo period. At the latter half of Edo-period, the money order system, futures deals buying (price system) had been originally developed in Japan. Why could this unique system be established in Japan? Japanese society was originally based on small villages that were divided by small valleys, rivers and ridges. Thus, each village could be self-supported and, accordingly, the inter-villages would compete against one another, but the inner village in near communism. This tendency still exists in today’s Japanese Society. The inner-village type organization, such as companies, local governments, schools, even universities, etc. are like communism, but inter-organizations are totally up against among each organizations like a free market battle. The summary of the Japanese economic system can be explained as the division and integration of Communism and Capitalism.

This special system made the unique closed-culture harmonized communism and capitalism. These characteristics are owing to such physical factors as isolated islands or closed society and a unique language. During the Edo period (280 years), the Japanese people where able to attain the high-level culture of a closed and sustainable society. In this period, waste treatment, a recycling system, a complex morality system, a high security system and a high quality technology system had been attained by many factors as shown in Table 1. The goal of Japanese technology is to make good quality products. Nowadays, it can be said that is a large closed system (GAIA) and doomsday will be brought by the explosion in population or drastic ecological changes. There is no future in today’s capitalism and market system or even in present Japan. The system of the Edo period may show the good examples in making a sustainable future’s eco life that aims for zero emission and real happiness (that is, harmony of egoism and altruism) Those are communism for quantity but capitalism and market system for quality.

Table 1 shows the comparisons of Japan and continent...
in Characteristics. The characteristics of individual and human groups containing civilization and culture had been decided by environmental circumstances as shown in this table. The reason for war and misunderstandings among international countries may be explained by using characteristics of different progress in different environmental factors.

However this earth system (GAIA thought: large living thing) is too small to sustain a modern civilization with massive energy consumption. Japan succeeded in the formation of a closed system and having advanced technology despite a large population and limited resources on the small island during the Edo period. These systems may be useful for a future closed system earth (GAIA).

3. COMPARISON OF JAPAN AND GREAT BRITAIN CULTURES

Fig. 2 shows the difference between Japan and Great Britain situated same conditions (small island near a high culture continental civilization: China and France). The large differences between these two countries lie in the distance between the island and continent.

The people of England can easily go and back from their island to the continent, however travel between the Japanese island and the continent is more difficult. Great Britain being located in the ocean and near the continent produces an “adventurous spirit” and open system similar to the one in Japan before Edo period (Szakai merchant). Yuan Dynasty (China and Korea) failed in two great attack in the Kamakura age (800 years ago) and since that time Japan started for a long time aging before its Civil war. In the next 100 years (during the Civil war), Japan progressed by trading to Spain and Portugal. After the civil war (1500-1600), Japan again closed its borders and could be easily protected by distance from continental army and by original advanced weapons (few hundred thousand guns) made during the civil war age. The closed system established in the Edo period may give a good hint for today’s environmental problems.

After the 2nd world war, Japan started from nothing in Industrial system, however the human resources and beautiful natural fields (mountains rivers and forests) remained. No resource and long island were advantageous for a free trade system. Besides big countries having nuclear weapon could not begin the big war. The peace in Japan has continued for long time (60 years) and succeeded in high economical growth. Besides, “Oil Shocks” several times brought on quality development in every aspect of technology. Nowadays, the production of material (parts of consumer’s goods) and capital materials (machine tools, civil engineering machines etc.) are mainly supplied by Japan.

Japanese technologies will be led by many countries in the deflating world. The big technological system such as Coal and an Atomic Power Plant can be supplied by only a few Japanese companies such as MHI, IHI, and TOSHIBA (HITACHI).

Japan’s GDP ratio in the world is 15%, but its consuming energy is only 5%. This value shows a tendency toward high energy efficiency and the Japanese system helps decrease CO2 emissions.

In order to dissolve the environmental problem, this common moral should be posed to the world: What is the purpose of life? This big subject is philosophy itself. Beauty— The beauty of life is formed by self control (An Imperial Respect). The direction of technology should be change from no use of animal function to art and

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Fig. 4. Typical recycling of aqua solution, carbon dioxide and Silicate containing earth’s crust and mantle cycling.

Fig. 5. Flow system equipment.
Fig. 6. Starting and resulted samples.

Fig. 4 Conditions: N₂ gas + H₂O(50%), Reaction time 60min, Reaction temp. 573K

susceptibility. Those are characteristics in traditional Japanese technologies.

4. PRACTICAL TOPICS BY WATER POWER (USING WASTE HEAT WATER ~573K)

4.1. Characteristics of water and aqueous solutions

Characteristics of water is shown in Fig. 3 and summarized as follows: 1) Dissolution power, 2) Extremely high reaction media, 3) Supporting material of every life, 4) Earth is living by water circulation and metabolism explained by GAIA thought, and 5) Wide ability as solvent from ionic to radical reaction.

However, we do not understand even the structure of aqueous solution and the basic theory related water has not been established yet.

The wide range of high dielectric constant and Kw value shows that the water has a miracle power not only in reaction media, but also energy transformation — supporting in life containing earth body. The essence of earth body as living thing circulation, metabolism, and so on is shown in Fig. 4.

4.2. Some applications using closed system based on GAIA thought.

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4.2.1. High pressure mild steam process (using waste heat from power plants)

Extraction of high value material from Biomass (cedar leaf, thinning out cedar wood, hinoki (Japanese Cypress), bamboo, bony parts of fish, kitchen waste, night soil, bio-treatment methane sludge, etc, and extraction residue can form activated carbon (a decontaminated reagent)

These processes have been developed by using mild hydrothermal steam up to a saturated vapor pressure curve. The traditional process can be used under these mild conditions. By using dry steam, the there is little corrosion and the process can be completed at a low cost. Furthermore, the reaction product easily forms active carbon. As the temperature rises relatively high, valuable oily material can be extracted.

4.2.2. Decomposition treatment of environmental contamination materials

CFC, Dioxin, PCBs can be easily decomposed by de-chlorination with hydrolysis under alcoholic alkaline hydrothermal conditions up to 573K (350℃). In the case of PVC, it can be easily decomposed under a steam phase of up to 523K (250℃). When PVC is treated in a hydrothermal solution, perfect decomposition is very difficult for no-affinity to water. Water vapor molecules (having high affinity to oil) can be easily transferred

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inside PVC particles and the resulting reaction would accelerate the decomposition of the bond between the chlorine and carbon molecules. The water molecule coordinates between hydrogen and chlorine and to occur the de-HCl reaction (formation of C-C double bond). The reaction product after perfect de-chlorination is poly-en (poly acetylene). These are expected as starting material for synthesis of a functional polymer such as ion exchange resin, epoxy resin, etc.

Figs. 5 and 6 show the equipment and bamboo sample and the resulting carbon.

4.2.3. Diamond synthesis from 1.1.1.trichloroethane. The conditions of 573Kand 0.8GPa

Using hydrated diamond powder and 1.1.1.-trichloroethane, the poly-crystal diamond could be synthesized under the conditions of high alkaline, 8-1GPa, and 573K (300°C).

Fig. 7 shows the apparatus of very high pressure hydrothermal conditions. This can be used up to 2-GPa and 300°C without leaking any of the liquid sample. The SEM images of starting diamond and the resulting samples at various times. This figure shows a grain growth of polycrystalline diamond. These results show a large grain of diamond using a large container which is possible to make under mild conditions.

REFERENCES