

Globalization, world habitat and Japanese identity: From 20th century machine- to 21st century global environment-oriented civilization

Koichi Tonuma

The author, Emeritus Professor at Waseda University, Tokyo, is currently Chairman of the Board of the Research Institute for Urban and Environmental Development, Japan (UED). Dr Tonuma is the author of a book entitled Japan in the 21st Century with emphasis on planning for residential surroundings, and of numerous articles, some of which have also been published in Ekistics. He is a former Vice-President of the World Society for Ekistics. The text that follows is a revised and edited version of a paper presented by the author at the WSE Symposium "Globalization and Local Identity," Hikone, Japan, 19-24 September, 2005. He has pursued the theme of this paper in research published in Japanese in the UED Report, January 2007, and is currently researching habitability zones and Ecumenopolis.

Globalization and civilization zones

A definition

The term "globalization" normally expresses a situation where highly developed communication and information networks, embodying the science and technology of modern machine civilization, cover the earth like the surface of a muskmelon, creating a web of constant economic and political activity. It could also be defined as "the world-wide spread of machine civilization, which began with the energy and information revolution." From the viewpoint of human settlements on earth, the situation could be defined as "a remarkable rise of continuity of human settlements which historically were discontinuous." C.A. Doxiadis proposed that this is a process towards Ecumenopolis, a settlement that covers the entire globe. The various scales of habitation unit range from:

- the house;
- the village;
- the city;
- the region;

to

- the nation; beyond which there is (a) economic activity, (b) political activity, (c) activation of human interchange, (d) expansion of human settlement regions, and (e) daily access to the world-wide transmission of information. Beside reports of daily happenings and sports such as that of the Olympic Games and soccer, there is news of terrorism, war, and environmental disruption.

In the above context, the term globalization could be redefined as "the situation where an awareness at the individual level that the earth is the ultimate field of human survival becomes the norm"; a spreading appreciation that our "home" on earth is shared by the rest of humankind, or, as R. Buckminster Fuller put it, recognition that we are "earthians" living on "Spaceship Earth."

As earthians, facing various problems or conflicts seen on

earth, we become more and more aware how precious environment is for the survival of our earth.

Globalization based on geography, and multiple civilization zones

Over tens of thousands of years of human history, the framework of human settlements, from house to village to city, has been the nation state. The history of humankind has been the history of the rise and fall of nations. The system of one-country-one-nation accounts for 200 countries covering the territory of the earth.

Each country is located in a particular place, characterized by its geography, topography, and climate, as well as its historical identity, but this frame is artificial and not necessarily stable, as can be seen at border zones. In fact, supranational alliances have emerged such as the European Union (EU) covering European countries, and leagues of nations such as the former Soviet Union. In Asia there is an economic domain mediated by the ocean, namely Association of Southeast Asian Nations (ASEAN).

It seems that domains of supranational alliances are influenced by geopolitical factors such as geography, topography and climate, as well as the distribution of habitable land – land, sea and atmosphere. Historical background is also an important factor in the creation of a civilization.

Arnold Toynbee, who was a member of WSE, grouped human settlement domains into five civilization zones:

- European Christianity,
- Eastern Christianity,
- Islamic,
- Hindu Indian, and
- East Asian civilizations.

Recently, S. Huntington proposed nine civilization zones in his *The Clash of Civilizations and The Remaking of World Order*.

- Western;
- Latin American;
- African;
- Islamic;
- Sinic;
- Hindu;
- Orthodox;
- Buddhist; and,
- Japanese.

According to this classification, Japan's uniqueness stands out as the only case where current national frame coincides with a civilization zone. "Sinic" includes existing China as a core nation as well as surrounding areas. "Latin American" and "African" are named after the continents, while Islamic, Hindu, and Buddhist are defined in terms of religion. "Western" is a general term

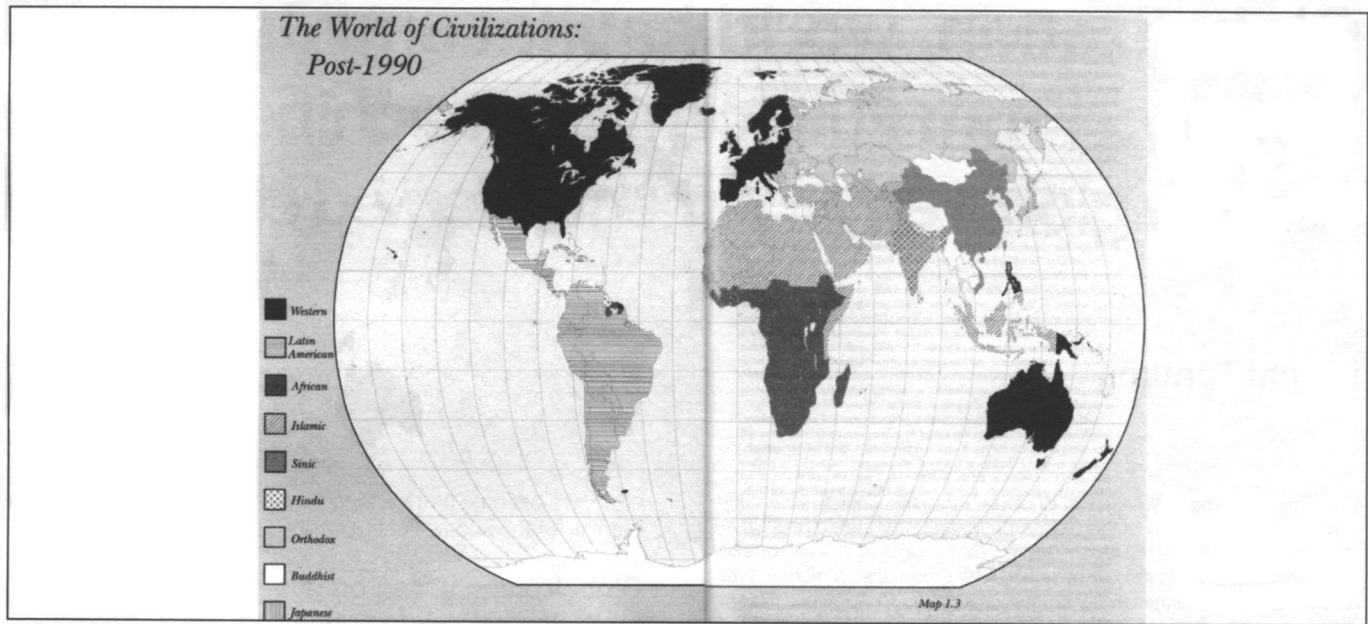


Fig. 1: Population prospects and population growth rates according to various regional divisions of civilization zones. (Source: Samuel P. Huntington, *The Clash of Civilizations and the Remaking of World Order*, Simon & Schuster, 1996).

bundling together North America, Europe, and Australia which share European origins (fig. 1).

The shape of its human settlements is part of a civilization, starting from house, village, city, to country; so are common languages, history, customs, and social systems. In order to con-

sider the characteristics and identity of human settlements according to basic conditions and the distribution of habitable land, let us borrow Huntington's theory of 9 groupings (figs. 2a, 2b and 2c). In these figures, the nine zones have been superimposed on a map of the world showing habitability in terms of climate.

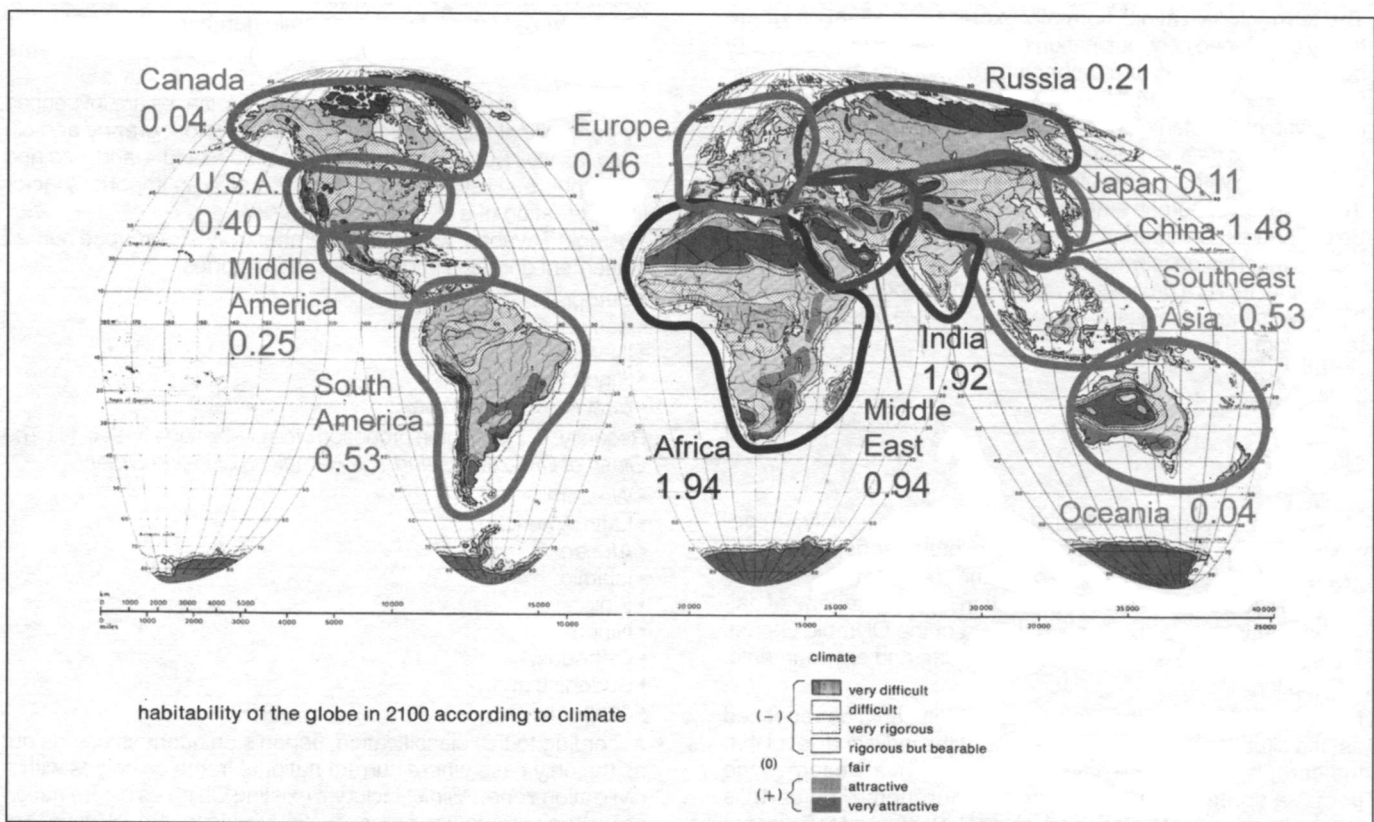


Fig. 2a: Push and shove game of civilization – Civilization Zones. Numbers are population prospects in 2050 (unit: billion people). (Source: Samuel P. Huntington).

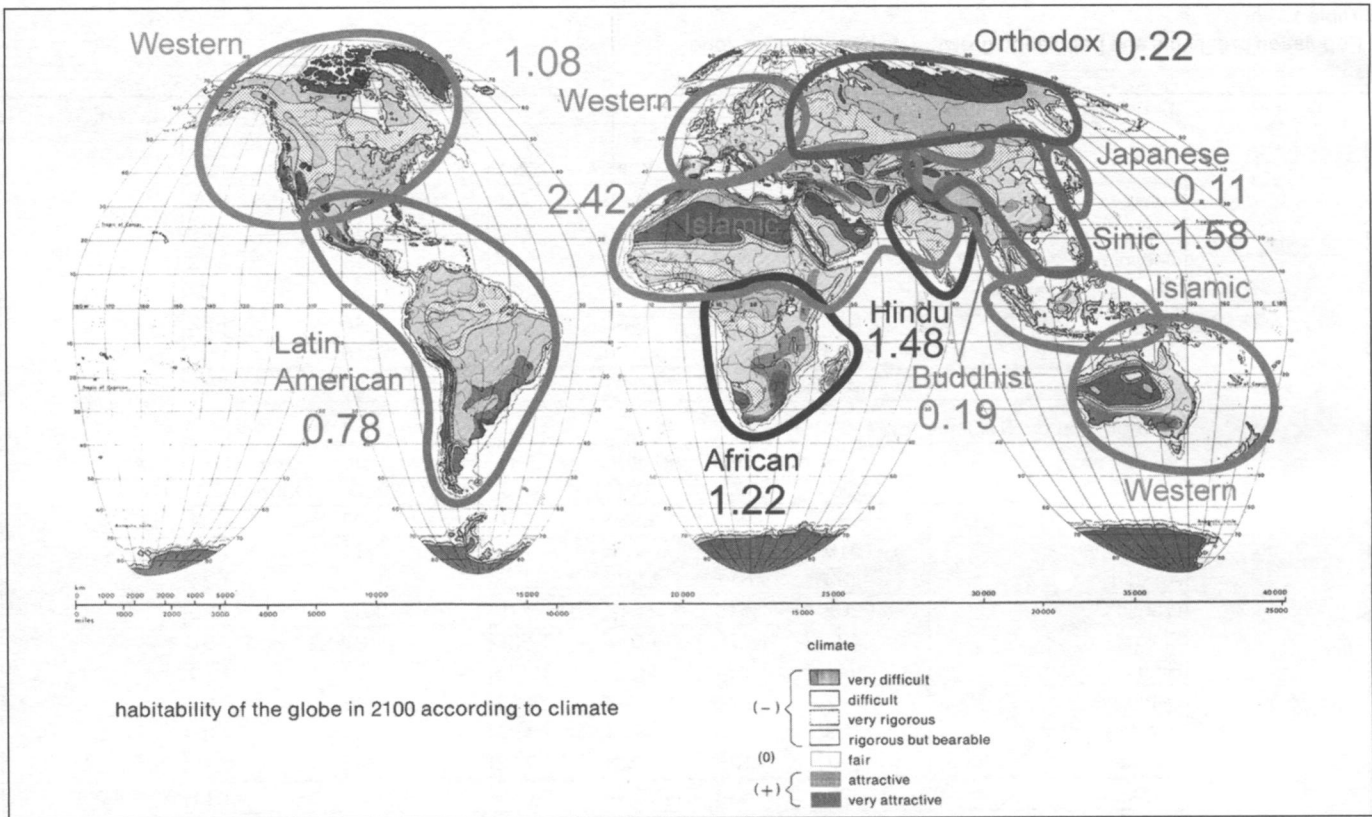


Fig. 2b: Push and shove game of civilization – Geopolitics civilization zones. Numbers are population prospects in 2050 (unit: billion people). (Source: Samuel P. Huntington).

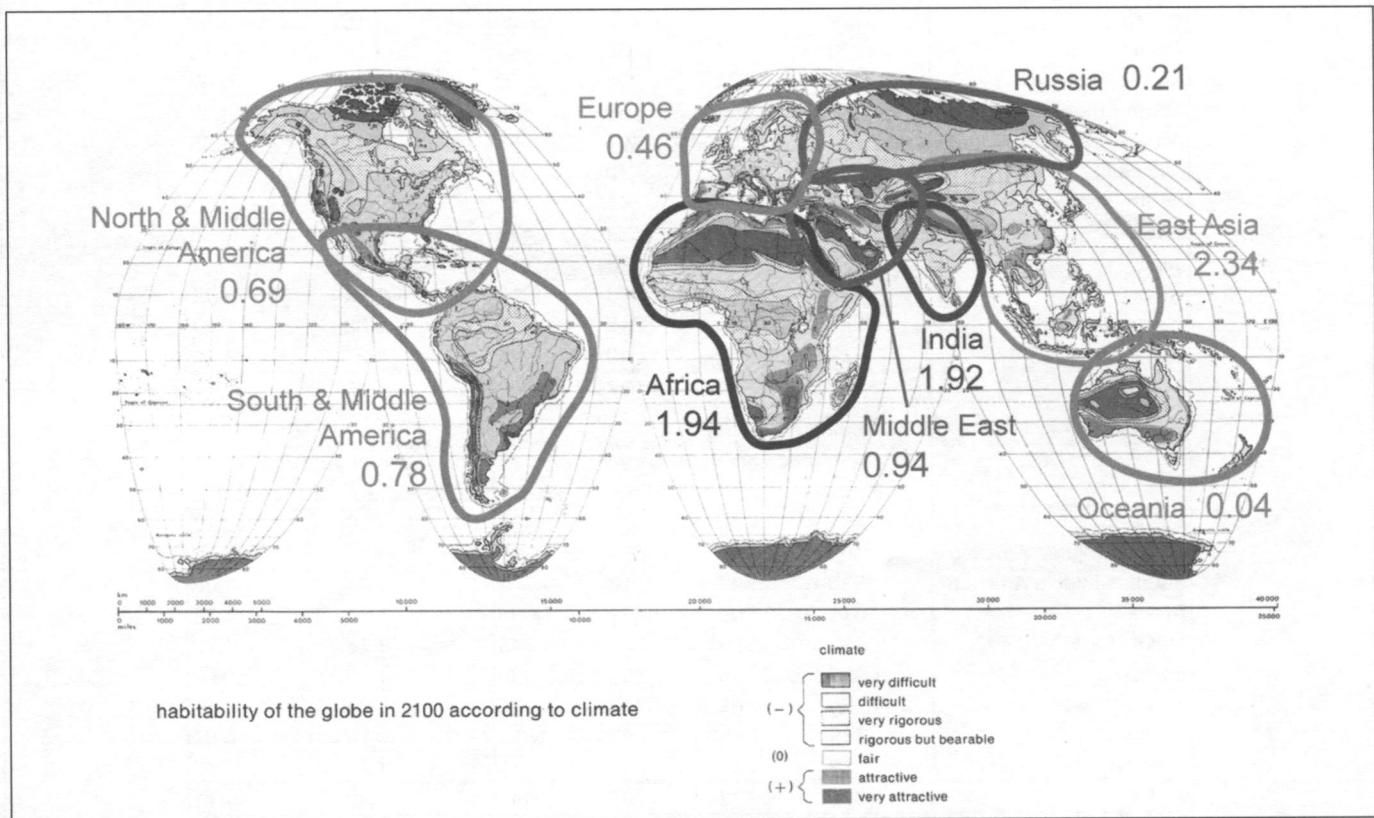


Fig. 2c: Push and shove game of civilization – Movement towards larger civilization zones. Numbers are Population Prospects in 2050 (unit: billion people). (Source: Samuel P. Huntington).

Table 1
Population prospects and population growth rate by civilization zone

a) 6 Regions according to continent						
	Population (million)				Population growth rate (%)	
	2000	2010	2030	2050	2010~2030	2030~2050
Europe	799	802	785	743	0.98	0.95
North & Middle America	485	540	633	688	1.17	1.09
Oceania	29	33	40	44	1.21	1.12
South America	349	401	485	528	1.21	1.09
Africa	811	1,005	1,461	1,935	1.45	1.32
Asia	3,603	4,052	4,783	5,125	1.18	1.07
TOTAL	6,077	6,833	8,187	9,063	1.20	1.11

b) 9 division by S.Huntington (1990~)						
	Population (million)				Population growth rate (%)	
	2000	2010	2030	2050	2010~2030	2030~2050
Western	884	945	1,033	1,075	1.09	1.04
Latin American	519	594	718	778	1.21	1.08
African	493	611	902	1,218	1.48	1.35
Islamic	1,262	1,515	2,017	2,419	1.33	1.20
Sinic	1,424	1,519	1,632	1,582	1.07	0.97
Hindu	944	1,094	1,342	1,478	1.23	1.10
Orthodox	291	277	247	215	0.89	0.87
Buddhist	133	149	174	185	1.17	1.07
Japanese	127	128	123	112	0.95	0.92
TOTAL	6,077	6,833	8,187	9,063	1.20	1.11

c) Geopolitical division						
	Population (million)				Population growth rate (%)	
	2000	2010	2030	2050	2010~2030	2030~2050
Europe	461	472	473	458	1.00	0.97
U.S.A	284	312	361	395	1.16	1.09
Canada	31	34	39	43	1.16	1.10
Middle America	170	194	234	250	1.20	1.07
South America	349	401	485	528	1.21	1.09
Africa	811	1,005	1,461	1,935	1.45	1.32
Middle East	458	559	770	943	1.38	1.22
South East Asia	519	591	701	752	1.19	1.07
China	1,352	1,437	1,533	1,475	1.07	0.96
Japan	127	128	123	112	0.95	0.92
India	1,196	1,392	1,723	1,915	1.24	1.11
Russia	289	275	245	213	0.89	0.87
Oceania	29	33	40	44	1.21	1.12
TOTAL	6,077	6,833	8,187	9,063	1.20	1.11

d) Movement of the bigger civilization zone						
	Population (million)				Population growth rate (%)	
	2000	2010	2030	2050	2010~2030	2030~2050
Europe	461	472	473	458	1.00	0.97
North & Middle America	485	540	633	688	1.17	1.09
South & Middle America	520	595	718	779	1.21	1.08
Africa	811	1,005	1,461	1,935	1.45	1.32
Middle East	458	559	770	943	1.38	1.22
East Asia	1,998	2,156	2,356	2,339	1.09	0.99
India	1,196	1,392	1,723	1,915	1.24	1.11
Russia	289	275	245	213	0.89	0.87
Oceania	29	33	40	44	1.21	1.12
TOTAL	6,077	6,833	8,187	9,063	1.20	1.11

(Source: United Nations, *Medium Variant of World Population Prospects: The 2004 Revision Population Database*).

The population figures are those in table 1b.

● **Western:** The "Western" territories of North America, Europe, Australia and New Zealand are highly suitable places for human settlement with large areas of habitable land.

Europe has a long cultural history; where city culture bloomed. The United Kingdom is the birthplace of the Industrial Revolution, and became a model for the modern nation. More and more countries in this region are now joining the EU.

North America, especially United States of America, could perhaps be counted as a civilization unit in itself. Starting with immigrants from Europe, many ethnic groups have subsequently intermingled and spread modern machine civilization throughout its habitable areas. Also, America is currently a major economic and military super power.

Australia and New Zealand were formerly European colonies, and the lifestyle there is strongly Western.

● **Latin American:** Latin America, including Mexico, has a mosaic-like pattern of varied cultures and small civilizations. The calm tempo of life commonly seen in this region has been put down to climatic conditions, though whether this is a factor in the delay of modern development is debatable.

On the Atlantic side of the continent, there are large tracts of northern territory that are considered to be habitable but the Amazon forests, an important source of oxygen supply, are considered difficult for habitation.

● **African:** Africa, which lies on both sides of the equator, has a variety of natural habitats such as tropical rain forests, savannah, desert, and areas of Mediterranean climate. Many tribes share the land. A civilization where human beings coexist with nature developed here. Colonization by Europe and America, which continued until the post World War II period when many countries became independent, has covered the African continent with many borderlines. Its encounter with modern machine civilization has been bewildering, population of this area as a whole is rapidly increasing, and the basic conditions of life are difficult.

Huntington defines "African" to mean the southern half of the continent and Madagascar, as he includes the northern half with "Islamic." Personally I assume it is still possible to treat Africa as a single civilization zone, so there are two ways to analyze this area.

● **Islamic:** Islamic civilization as defined by Huntington has a very large expanse, extending from North Africa, through Turkey and the Middle East, Iraq, Iran, Afghanistan, Pakistan through to Malaysia and Indonesia. Much of this area produces oil, but conditions of habitability can be severe. The sight of a mosque under strong sunlight is the symbol of a habitable area, and acts as a nodal point in an Islamic network. In contrast with the Cold War structure of former U.S.-Soviet Union relationships, ethnic battles occur here frequently. The intervention of the United States in these conflicts has created a collision of civilizations, with considerable destruction of human settlements.

● **Sinic:** The Sinic civilization zone as drawn out by Huntington includes parts of Indochina, Taiwan, the Korean Peninsula as well as the People's Republic of China, the core nation. Arnold Toynbee included Japan in this domain. Characteristics of this civilization are the use of Chinese characters, social values based on Confucian values and a social system, culture and art that can be considered Oriental in contrast to Occidental.

The People's Republic of China is a communist country and both before and since the collapse of the Soviet Union, had been attempting rapid modernization. China has tremendous development power, with large tracts of habitable land along the Yellow River and Yangtze River, connecting the eastern coast with the interior. Currently, China is boldly adopting a market economy, and its economic growth is remarkable. One of the difficult domestic issues is the disparity between the urbanized coastal areas and the inland farmland area.

The Korean Peninsula is divided between South Korea and North Korea, with different social systems. Both countries belong to the same ethnic group, share culture and language as well as having strong blood connections. There is a possibility of unification in the future.

● **Hindu:** The Hindu civilization zone, with India as its core nation, is different from both the Orient and the West, and has been defined as a middle zone, "Chu-yo", by Tadao Umesao. It has a culture, a style of civilization, and an identity of its own. The base of the popular religion is polytheism and idol worship. It recognizes that the roots of human life and sexuality are moulded by a myriad of existences. India's large habitable area is home to a population of more than a billion.

● **Orthodox:** Until recently most of this zone was partitioned off by the Soviet Union as a part of the Communist bloc. The end of Soviet Union-style communism resulted in removing the framework of this system. It may now be considered as an extension of the Greek Orthodox civilization zone. From a geographical viewpoint, this area is classified as a cold district of difficult habitability, at the northern edge of the Eurasian Continent. The influence of nature is dominant here in the discontinuous habitable areas along the Trans-Siberian Railroad, and the eastern area that was directly influenced by the Russian Orthodox Church. The population of this zone, including Russia, has a tendency to decrease.

● **Buddhist:** From the point of view of religious classification of civilizations, Buddhism is a major religion. It has become established in the fertile habitable areas and the tropical rain forests of Thailand, Myanmar, Laos and Cambodia and in Mongolia and Tibet to the north. It is not impossible to class Japan as a Buddhist country. Buddhists historically do not admire armed battles. It is a peace-oriented religion.

● **Japanese:** Japan is a maritime country comprising four main islands (Hokkaido, Honshu, Shikoku, Kyushu) and around six thousand small islands. There is considerable habitable land in the total territory of 380,000 sq.km, which currently has a population of over 120 million, at a rather high average density of 300 people per sq.km. The Japanese islands were detached from the continent 20,000 years ago. They have long been inhabited, and there have been three strong influences from outside in forming the nation as it is seen today:

- The first was from China, around the 7th century AD, when Chinese characters, religion and social systems were introduced. It took several centuries for these to be Japanese.
- The second was a program of modernization by adopting European and American technology and social systems from the middle of the 19th century, when the Edo era shifted to Meiji.
- The third was during the middle of the 20th century, after World War II, when American cultural influence was strong and democracy took root.

These three stimuli were well absorbed into the lifestyle of these islands, resulting in a Japanese style of settlements, as witnessed by the high density and high mobility of today's residential environments.

As for myself, being Japanese, I have a mysterious feeling toward this Japanese civilization that took in various cultures, and is positioned at the eastern end of the Eurasian Continent. Huntington too would have paid attention.

Ebbs and flows of world population movements

Throughout history, the earth's population has consistently been increasing. The United Nations expects the world's population of 6.13 billion (2001) to reach 6.83 billion (2010), 8.19 billion (2030), 9.06 billion (2050), and finally exceed 10 billion in the latter half of 21st century.

Asia and Africa are the main components of this population growth, especially Africa, where a current population of 811 million (2000) is estimated to double to 1.9 billion by 2050.

In Asia, it is projected that there will be a gradual slowing down of population increase rates from 1.18 percent (2010-2030) to 1.07 percent (2030-2050) (table 1a, fig. 3).

Japan is the first Asian country to show a dramatic population

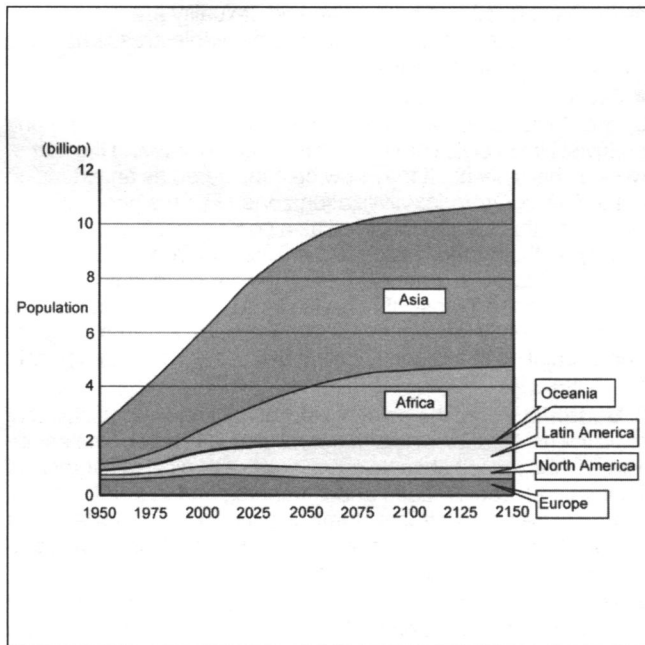


Fig. 3: Prediction of the world population according to regions. (Source: U.N. World Population Prospects 1998).

decrease, from 127 million (2010) to a projected 112 million (2050) (table 1b). Other countries also estimated to go into decline are Kazakhstan, South Korea, North Korea, Singapore, Sri Lanka, Tajikistan, and China.

China's population is expected to peak at 1.4 billion in 2030, after which the effects of the restraint policy will be felt, and population will begin to decline.

The trend in India is likely to be the reverse, with an increase in population from 1.19 billion to 1.92 billion over the same period, thus becoming the world's most populous nation. In addition, various countries in the Islamic civilization zone, Israel, Iraq, Iran, Indonesia, Saudi Arabia, and Pakistan show remarkably high population increase rates and will form a huge population zone.

Apart from a population decrease in Cuba, most of North, Central, and South America will continue a general pattern of slow population growth. Among the developing countries, a steady increase will continue in the United States of America, reaching the level of 400 million by the year 2050.

The population of Oceania will continue to increase slowly.

Europe's population will generally decrease from 802 million (2010) to 743 million (2050), the population dynamics having entered a decrement period. Over the next 50 years, only Ireland, and Britain will gain population.

It is possible to project world population trends from population size, distribution, and dynamics during the first half of the 21st century (fig. 2b):

- Two modernized civilization zones, Europe and Japan, at either end of the Eurasian Continent, show a clear decrease of population.
- The northern part of the very large Eurasian Continent, including Russia, is also a zone of decreasing population.
- There will be two hugely populated Asian countries, China and India, with 1.5 billion and 1.9 billion population respectively.
- Africa as a whole has a rapidly increasing population growth rate, expecting to reach a huge population of 1.9 billion.
- The Middle East will have as high a growth rate as Africa, and the whole Islamic civilization zone, containing north Africa and Indonesia, will account for 2.4 billion population.
- North, Central and South America taken as a whole continue to show a progressive increase in population.
- The United States of America will be the only one of the current developed nations to maintain population growth, and by the year 2050 will reach 400 million.

Can it not be said that regional aspects of human settlement civilization depend on habitable land and population dynamics?

- When rapid population growth (over 1 percent p.a.) occurs in a certain settlement area (civilization sphere), there is a risk of various clashes or collisions over the habitable land. At times, power may go to small groups within the civilization sphere, at other times to outside groups (e.g. Islamic countries, Africa, Asia).
- When population increase in a certain habitable area is gradual, then its civilization sphere could be stable for a while (e.g. North, Central and South America).
- When population in a certain habitable area begins to decrease, its civilization goes into decline unless there is human interchange with other civilization zones (e.g. Europe and Japan).
- When the population of a core nation is huge, what happens to its population trends has a big influence on human settlements throughout the earth (e.g. China, India, United States of America).
- A civilization zone that does not have a massive core nation can create a league of nations, for better balance with the other civilization zones (e.g. Islamic countries, EU).
- During the balancing process, new civilization zones can emerge from an overlapping of two civilizations (e.g. Japan and the Far East Asia civilization zone including China).

Role and identity of the nation

The nation state is a framework which consists of territory, citizens and governmental systems. By overcoming internal and external factors of insecurity, it contributes to the stability of human settlements on earth. In doing this, each nation constantly faces a struggle with domestic issues.

Governmental systems vary from monarchies to democracies to socialist and communist systems, and, depending on the nation's history, there are other in-between systems.

As the globalization of the earth's human settlements proceeds, it is through the framework of the nation state that political, economic, and military in-fighting is carried out. The United Nations, in which 200 countries participate, was established to safeguard the peace of the human habitat. Nations try to ride over the wave of dynamism that is sweeping over their civilization by having emblems of identity, national flags and leaders.

The framework of a nation can be both hard and soft. Similarly, nationalism may be broad or narrow, depending on the time and situation.

Local identity: Japan as an example

Judging from its population dynamics, one civilization unit, Japan, occupying a position at one corner of East Asia, has come to a historic turning point. Its population is facing a rapid decrease.

In 2000, Japan's population was 127 million, and government estimates were that it would start to decline before the decade

was out, down to 120 million (2025), 100 million (2050), and by the end of the century, less than 70 million. The root causes of the decline are falling marriage and birth rates, combined with the ageing of society and the increase in single family households (figs. 4, 5 and 6).

Japan has a territory of 377,877 sq.km. Population density is estimated to decline to 337.4 persons per sq.km (2010), 328.5 (2020), 266.2 (2050), and 185 people per sq.km (2100). In other words, it will drop from over 300 persons per sq.km to the hundreds.

However, there are grounds for arguing that globalization could bring with it an influx of foreign residents to Japan, who would contribute to stabilizing the population. The question then arises of what would be a reasonable population density for Japan.

In general it can be said that an ideal population density for the 21st century would be one where people's livelihood and consumption patterns can be kept in sustainable balance with the natural and man-made environment at that particular point in the history of civilization. Anything above 300 persons per sq.km is dense.

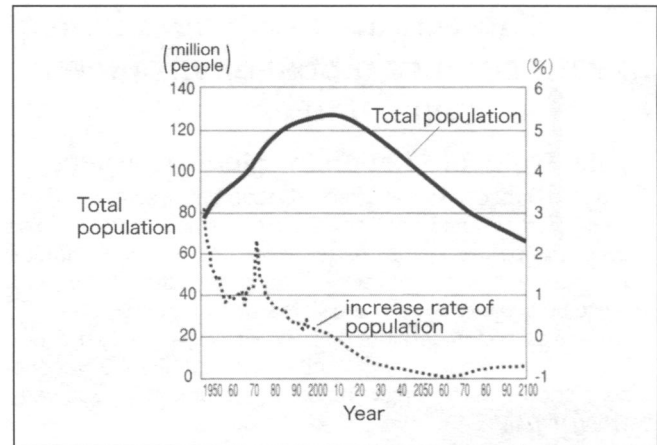


Fig. 4: Change of the total population and Change of the population growth rate in Japan (1947-2100). (Source: Adapted from *National Census and Population Projections by Prefecture, 1997*).

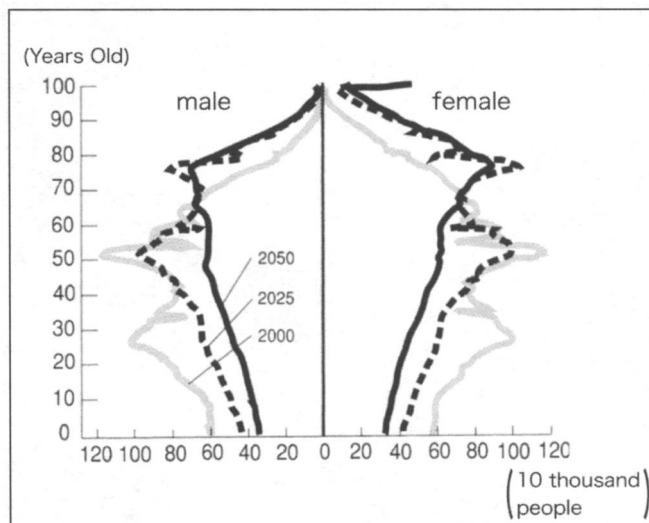


Fig. 5: Change of the population histogram in Japan. (Source: Adapted from *National Census and Population Projections by Prefecture, 2002*).

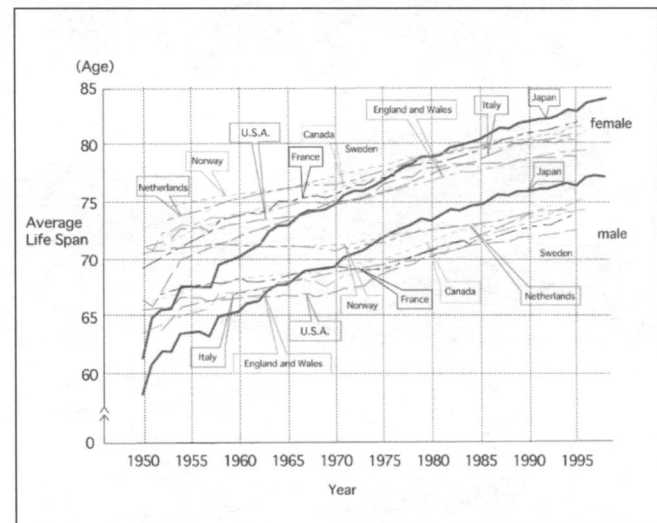


Fig. 6: Change of the average life span. (Source: *World National Census 2003/04, Yano Tsuneta Kinenkai*).

When I consider what would be a reasonable population density for Japan in the future, the example of Europe comes to mind, maintaining approximately 200 persons per sq.km. Such European countries project an image of lasting maturity, evolved through their long history.

Under such conditions, how would East Asia, including Japan, emerge as a new habitation sphere? Is it not likely that the interchange of people, goods and information will become more active, and an East Asia habitation zone might emerge?

Taiwan, Japan, South Korea, North Korea and China have already built up active economic interchange, but in order for a stable and peaceful habitation zone to exist in East Asia in the 21st century, the participation of ASEAN countries (Association of South-East Asian Nations: Thailand, Cambodia, Myanmar, Laos, Indonesia, Vietnam, the Philippines, Malaysia, Singapore, and Brunei) is required. Currently, despite the chaotic situation, movement of information and goods as well as deepening economic exchange are being promoted in the East Asia region. It can be envisaged that over the next 50 years this will include

population interchange, movement, and emigration across borderlines.

In such an image of the future, the role of Japan should be to free up its technology, accumulated knowledge, social systems, and human resources for the benefit of peaceful coexistence. It is also appropriate that Japan should play an active role in facing up to the problems of poverty and environmental degradation in the region.

Japan's 21st century national plan should not be confined to domestic issues. Japan should behave as a responsible member of a larger habitation zone. Its 21st century role is to find a sustainable way of living within East Asia's diverse ecosystems, history and culture. No doubt, the creation of a new civilization zone overlapping on the rims of existing zones, with peaceful interchange across the sea, would contribute to the peace of the human habitat on earth. The identity of the Japan model, while based on its own history, should at the same time be a vehicle for a peaceful human habitat.

From 20th century machine-oriented to 21st century global environment-oriented civilization

Kyoto Protocol - Action for global warming

The Kyoto Protocol was adopted in December 1997 at the Third United Nations Framework Convention on Climate, held in Kyoto, Japan. The protocol aims at a reduction of 5 percent in greenhouse gas discharge by developed countries, based on the 1990 level, to be achieved by the year 2012 starting from 2008.

If the average temperature on earth rises by more than 2 degrees Celsius from the pre-industrial standard of 1850, various reports show that the effect on human settlements will be devastating (fig. 7).

ed the expected volume of 24 major world rivers at the end of this century. They reported gains in some rivers (e.g. the Ganges), which would cause flooding, and loss of quantity in others (e.g. the Euphrates), which would ruin farm production because of drought (JAPAN SCIENCE AND TECHNOLOGY AGENCY, 2005).

Global warming will cause massive damage to agriculture and cereal production in the world. A rise of 2.5 degrees Celsius would reduce 60 percent of wheat production and 40 percent of potatoes in India; 40 percent of corn in China. Not only will it directly influence survival in the most populated countries, but also its effects will be felt in the entire world.

“Africa is the area that is the weakest in the face of climate change, especially regarding water deficiency, since 70 percent of the population relies on the small-scale farming using natural

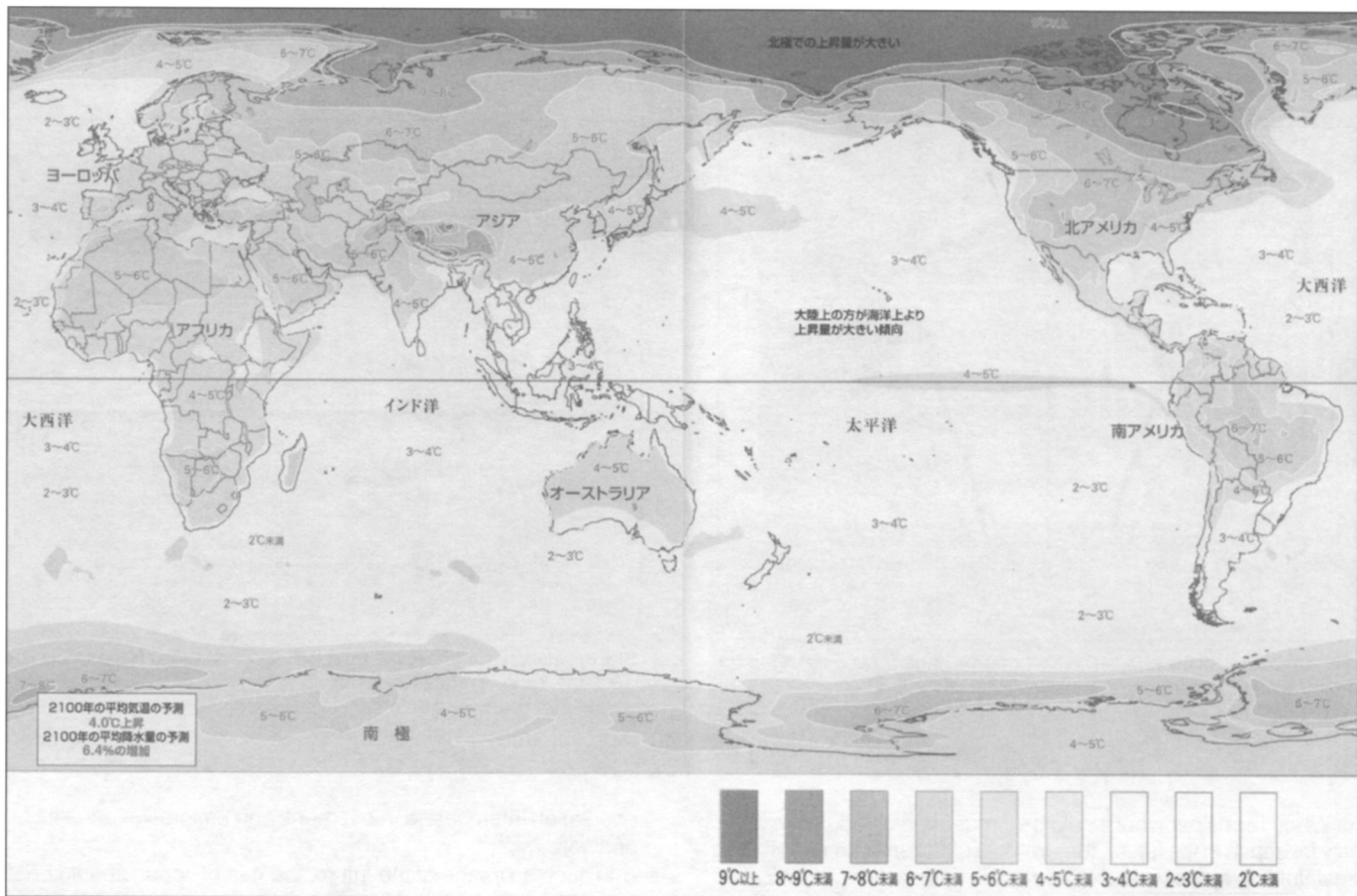


Fig. 7: Predicted rise in annual average temperatures between 2000 and 2100. (Note: The density code shows the difference in average temperatures between 2000 and 2100). (Source: Based on data by a joint study team from the Center for Climate System Research, University of Tokyo, National Institute for Environmental Studies, and Frontier Research Center for Global Change).

“A rise in world average temperature of 2 degrees Celsius will increase the danger to human health, aquatic resources, and food production on a global scale. A rise of over 3 degrees Celsius could cause catastrophic effects such as changing the flow of the ocean currents” (CENTRAL ENVIRONMENT COUNCIL OF JAPAN, 2005).

Also, on land, there will be serious impacts on human settlements from changes in the water volume of rivers, so important for human life. Japanese weather researchers have investigated

rain as the water supply” (BRITISH INSTITUTE OF INTERNATIONAL DEVELOPMENT, 2005).

The main sources of the greenhouse gases that cause global warming are the industrially developed nations. Rapidly industrializing China is following this tendency. Increasing production of CO₂ by the United States of America, Europe, Japan, Russia, and industrializing developing countries could result in a 2-degree rise of average temperature by the end of this century.

This is an environmental issue that concerns the entire earth,

and must be consistently tackled during the post-Kyoto era. Energy problems, environmental technology and delicately balanced regional measures – these are issues that extend beyond national boundaries and civilization zones (figs. 8 and 9).

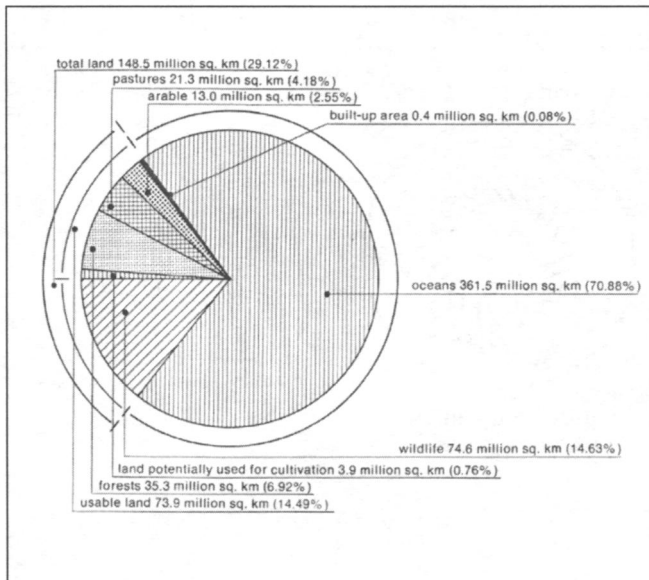


Fig. 8: Breakdown of the surface of the Earth. (Source: C.A. Doxiadis and John G. Papaioannou, *Ecumenopolis: The Inevitable City of the Future*, Athens Center of Ekistics, 1974).

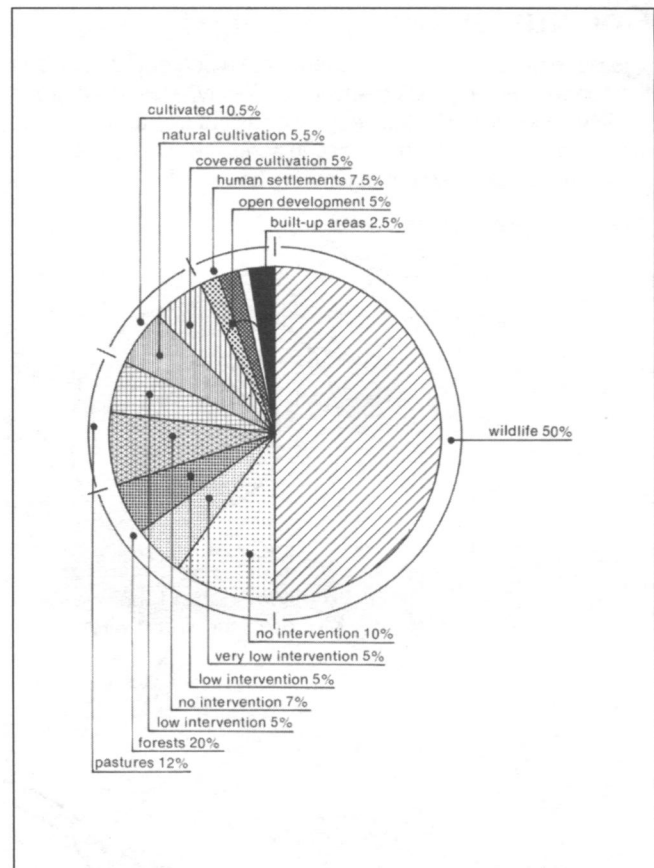


Fig. 9: Probable division of land uses in Ecumenopolis. (Source: C.A. Doxiadis and John G. Papaioannou, *Ecumenopolis: The Inevitable City of the Future*, Athens Center of Ekistics, 1974).

The issue of nuclear weapons

Sixty years have passed since Japan was defeated in World War II. The direct means by which the war ended were the atomic bomb attacks on Hiroshima and Nagasaki in August 1945, by the United States of America. Huge numbers of people died instantly, and the survivors have suffered long-term after-effects. Japan promised to abandon war, and established a Peace Constitution, which is still in effect today. It may be said that this Peace Constitution is part of Japanese identity.

Many of the world's countries now have nuclear weapons. The confrontation between the United States of America and the Soviet Union, that continued after World War II, caused the "Cold War" expansion of nuclear weapons on both sides, to maintain military balance. Europe, China, and India also tested nuclear arms during this period. Nowadays, some of the countries, which do not possess nuclear weapons, such as Iran or North Korea, are showing an appetite for nuclear development. If nuclear powers are to impose sanctions on countries which do not possess nuclear arms, should they not also practice nuclear disarmament themselves? Is it really impossible to maintain world peace without depending on nuclear arms?

Modern Machine Civilization and the Industrial Revolution, which began with the 19th century energy revolution, brought with it many conveniences. There was abundance, and people succeeded in creating larger and larger settlements, cities, metropolises, and megalopolises. They also developed linkage systems between various points on earth, road transport networks, air systems and information networks. At the same time, they developed powerful weapons to destruction. The zenith of such development was the creation of atomic bombs and nuclear weapons. These weapons are ominously stored in specific locations on the earth.

The 20th century saw many wars in the world. It could be said to have been a war century. Japan also pushed the country to a war that should not have taken place, causing big damage to various Asian countries. There was a time when the Great Powers of Europe and America invaded neighboring countries and enlarged their colonies. World Wars I and II literally destroyed human lives and settlements on a global scale. Even in the 21st century, wars have continued, between Palestine and Israel, between Islamic countries and America, with the insidious style of terrorism in its means.

War does not only destroy human settlements, it also destroys the natural environment and can deaden it. Nuclear war exterminates life and nature by the pollution of radioactivity.

Every August peace rallies are held in Hiroshima and Nagasaki, with prayers for peace and the abolition of nuclear weapons. Citizens beyond country boundaries gather together to share their concern for the problems that governments have failed to solve. Already a thousand cities have joined the peace movement that was begun in 1982 by the mayors of Nagasaki and Hiroshima.

Global settlements of the 21st century face a variety of difficult problems, with a general rise in population. The modern framework of one-country-one-nation is becoming unstable internally and externally, as can be seen from the overpopulation phenomenon. There will be a new order of groups of nations, with some clashes, and with mergers such as that of Japan, China, and other Asian countries into a civilization zone.

Conclusion

The issue of identity is first and foremost a personal one, within the context of globalization and local identity. Besides a group identity, rationalized by the geographical features and history of the particular locality and civilization zone to which a person belongs, there is an element of jumping beyond this local identity

and facing up to the earth as the origin of human existence. It is through each individual's awareness and stance on issues such as global warming, peace and nuclear weapons that the composition of globalization and local identity in the 21st century will be revealed. I think the world has shifted beyond machine civilization to become an environment-oriented civilization (figs. 10-12).

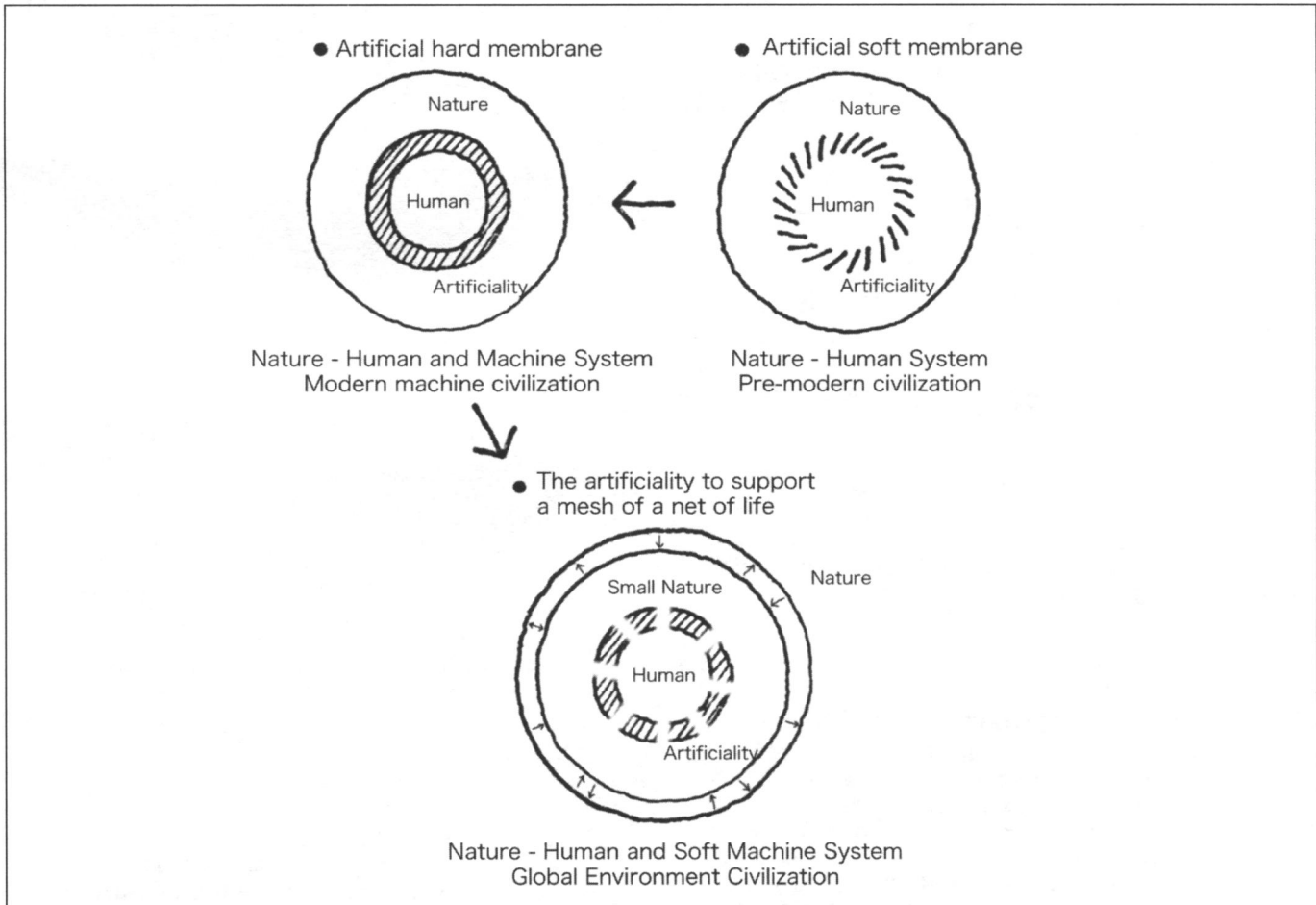


Fig. 10: From 20th century machine civilization to 21st century global environment civilization.

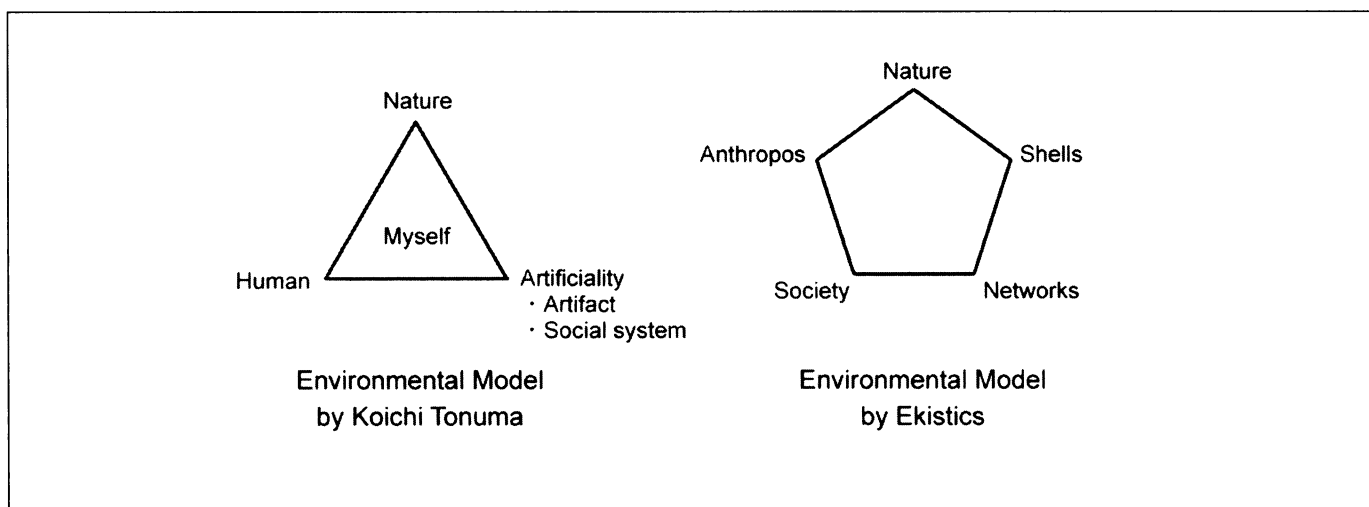


Fig. 11: Necessity of harmony of elements.

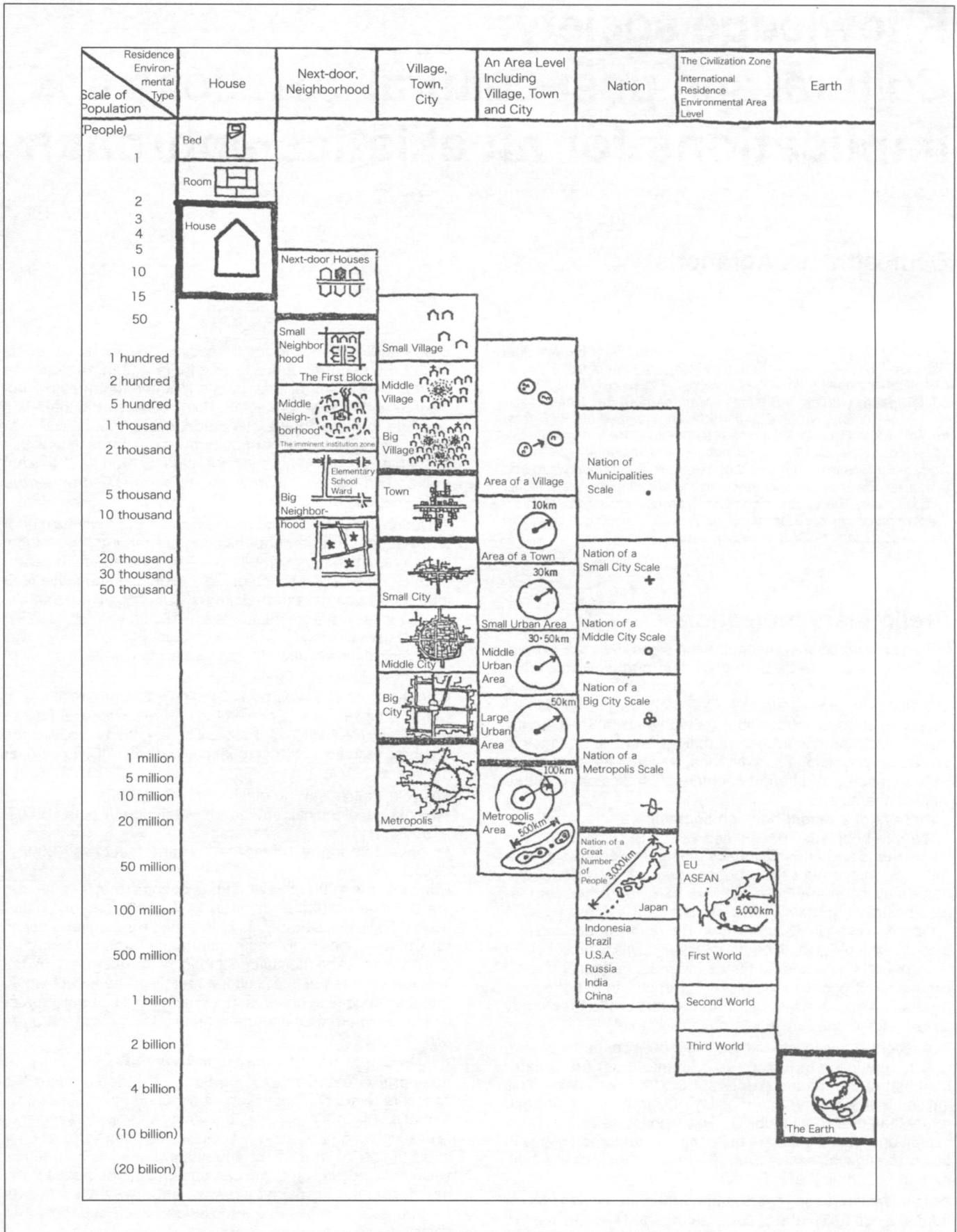


Fig. 12: Ekistic Grid by Koichi Tonuma, Theory of Population Scale, 1980. (Source: Adapted by Yasuo Matsumoto).