

Modernization and Human Development

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In the long history of over two million years, human beings have gone through the agricultural society, which was ushered in by the invention of written languages about several thousand years ago. The industrial age was unveiled by the Industrial Revolution of the 18th century, and the modern age ever began since more than 300 years ago. The modern age is only an instant in the long history of mankind, but it has brought about tremendous changes, making remarkable achievements and progress.

I. Productivity

Since the 18th century, mankind has been carrying out the revolution of productivity essences, including the energy revolution that replaced human and animal power with coal, petroleum and electricity, the material revolution that replaced wood and stones with organic synthetic materials (such as steel and plastics), and the information technology revolution, which has helped to realize remote manipulation and automation. These revolutions have expanded human production and development from the surface of the earth to the underground/undersea and space, from land to ocean, and from one country to the entire world, thus significantly contributing to the improvement of labor productivity. Human productivity increased by about 1% every 10,000 years in the Stone Age and every 100 years in the agricultural age; while in the 19th century after the Industrial Revolution, it increased by almost 1% each year. In the 20th century, labor productivity witnessed a new leap, and in the worldwide race with GDP figures, some countries even posted double-digit increase in a short period.

The following table shows the economic development (per capita GDP) of the world and different continents:

Table 1 Per Capita GDP of the World /Different Continents (0-1998)

International Dollars, 1990

	0	1000	1820	1998
World	444	435	667	5709
Western Europe	450	400	1232	17921
Latin	400	400	665	5795

America				
Africa	425	416	418	1368
Asia				
	450	450	575	2936

Source: *The World Economy: A Millennial Perspective*

Table 1 outlines the changes in world productivity since the Industrial Revolution of the 18th century. Firstly, from the global perspective, productivity basically stagnated in the 1,800 years of the agricultural age, but it had increased by 12 times by the end of the 20th century. Secondly, the Industrial Revolution, which first took place in Western Europe, accelerated the modernization movement. At the end of the 20th century, the productivity was 40 times that of the agricultural society, and the annual growth rate reached 1.5%. Thirdly, there was an obvious gap between Western Europe and other regions where industrialization took place later. As a result, the productivity in Western Europe was 13 times that in Latin America, 6 times that in Asia and 3 times that in Africa. The annual productivity growth rate in Asia (Japan exclusive) was lower than 1%.

Table 2 Annual Composite GDP Growth Rate in the World /Different Continents (0-1998) %

	0-1000	1000-1820	1820-1998
World	-0.00	0.05	1.21
Western Europe	-0.01	0.14	1.51
Latin America	0.00	0.06	1.22
Africa	-0.00	0.00	0.67
Asia	0.00	0.03	0.92 *

Source: *The World Economy: A Millennial Perspective*

II. Human Development

The impacts of modernization on human development are manifested in the population boom and health improvement (or extended life expectancy), as shown in Table 3:

Table 3 Population Growth in the World /Different Continents (0-1998) unit: million

	0	1000	1820	1998
World	230.8	268.3	1,041.1	5,908
Western Europe	24.7	25.4	132.9	388
Latin America	5.6	11.4	21.2	508
Africa	16.5	33	74.2	76
Asia	174.2	182.9	710.4	3,526

Source: *The World Economy: A Millennial Perspective*

Table 4 Average Composite Population Growth Rate in the World /Different Continents

(0-1998) %

	0-1000	1000-1820	1820-1998
World	0.02	0.17	0.98
Western Europe	0.00	0.20	0.60
Latin America	0.07	0.08	1.80
Africa	0.07	0.10	1.32
Asia	0.00	0.17	0.91*

Source: *The World Economy: A Millennial Perspective*

*Japan exclusive.

As shown in Table 4, the world population in 1 A.D. was about 230 million. It increased by merely over 30 million after 1,000 years, but reached 1 billion at the beginning of the 19th century, and later nearly 6 billion at the end of the 20th century, about 60% of which were from Asia. The population growth was not in pace with industrialization. Latin America witnessed the highest population growth rate, followed by Africa, Asia and Western Europe.

People's living conditions, social medical standards and population quality have been constantly improved along with the development of modernization. The average life expectancy at birth had significantly increased from about 20 years in the agricultural age to 60 years by the end of the 20th century, as shown in Table below:

Table 5 Average Life Expectancy in the World / Different Continents (1000-1999) year

	1000	1820	1900	1950	1999
World	24	26	31	49	66
Western Europe	/	36	46	68	78
Latin America	/	27	35	51	69
Africa	/	23	24	38	52
Asia	/	23	24	40	66

Source: *China Modernization Report*, 2015.

As Table 5 indicates, firstly, human life expectancy had increased substantially in shortly 200 years, compared with that in the initial stage of industrialization; secondly, the increase rate was generally in line with the economic development in different regions (specifically, Western Europe ranked first, followed by Latin America, Asia and Africa).

III. Social Development

Industrialization calls for the concentration of production factors, which inevitably leads to the

population concentration in cities, that is, urbanization. In the agricultural society, there were also cities, but the urban population remained largely unchanged. In the stage of industrialization, the urban population increased sharply. Therefore, the change in the urbanization rate (or the proportion of urban population to the total population) also reflects the process of industrialization and modernization of a nation/region.

Table 7 lists the data on the urbanization process in the world, advanced industrialized countries and China since 1700 for comparison:

Table 6 World Urbanization Process (1700-2015) %

	1700	1800	1900	1950	2000	2015
World	10	9	16	29	47	54
Advanced industrialized countries	11	11	30	55	74	81
Low- and middle-income countries	10	8	9	18	40	41
China	4.0	3.8	4.4	11	36	56

Source: *China Modernization Report*, 2015, 2018.

The global urbanization rate exceeded 50% for the first time in 2017. Four years later, the proportion of urban population to the total population in China also exceeded 50%. This indicates that the world has entered a new age of development in which cities are considered as the mainstay. In 2010, there were more than 120,000 cities in the world, including 23 megalopolises (with a population of over 10 million), 38 super large-sized cities (with a population of 5-10 million), 388 large-sized cities (with a population of 1-5 million), 513 medium-sized cities (with a population of 0.5-1 million), and small-sized cities (with a population of below 0.5 million). The population of altogether 962 non-small-sized cities accounted for 49% of the total urban population. Since industrialization and urbanization were particularly demanding on people's cultural competence, education witnessed rapid development. Generally speaking, primary education was developed in the 19th century, laying a foundation for the modern education. From the end of the 19th century to the beginning of the 20th century, compulsory education was popularized and higher/professional/technical education was vigorously developed in order to facilitate electrification. From the end of the 20th century to the 21st century, higher education was popularized and a lifelong education system was established. The popularity rate of higher education in 2015 is shown in Table 7:

Table 7 Popularity Rate of Higher Education and Adult Literacy

(Rate in 2015 unit: %)

	World	High income states	Medium income states	Low income states	China
Popularity Rate of Higher Education	36	74	33	8	43
Adult Literacy Rate	86	100	80	60	95

Source: *China Modernization Report*, 2018.

Generally speaking, the development of education is positively related to the development of modernization.

IV. The Modernization Movement Has Brought not only the Gospel but also Disasters to Mankind.

First of all, wars have become increasingly brutal since ancient times. In particular, in the industrialization era, wars were characterized by the increasingly frequent occurrence and extensive involvement, coupled with the shift from the age of cold weapons to that of hot weapons. The frequency of international wars and death toll from the 11th to the 20th century are shown in Table below.

Table 8 Frequency of International Wars and Death Toll in 1,000 Years (unit: million)

	11	12	13	14	15	16	17	18	19	20
Frequency of International Wars	0.47	0.39	0.57	0.62	0.92	1.23	1.13	1.15	1.64	1.22
Death Toll	0.057	0.12	0.41	0.50	0.878	1.613	6.108	7.001	19.423	111.10

Source: *China Modernization Report*, 2008

Data shows that from the 11th to the 15th century, international wars occurred only a few dozen times every 100 years, causing tens of thousands to hundreds of thousands of deaths. After the 16th century, wars took place more than 100 times every 100 years, causing several millions of deaths. The death toll increased to more than ten million in the 19th century. Nobel invented high explosive at the end of the 19th century and employed it in war, leading to a significant increase in lethality. Two world wars took place in the 20th century, each involving billions of people and tens of millions of casualties. In the late World War II, the United States dropped an atomic bomb on Hiroshima and Nagasaki in Japan, turning the two cities into ruins, where hundreds of thousands of people were killed, injured, missing, sick and/or disabled. Because of the increasingly long-range weapons, more and more civilians died in the war. In the cold war era, soldiers were the main victims of war. As aircrafts and artilleries were employed in World War I, the ratio of soldiers to civilian deaths was 6:1; while in World War II, the ratio became 1:2. In particular, in the 1990 war 90% of the victims were civilians; the “911” incident of 2000 was a new form of war basically against the civilians. The greatest threat to human development in the 21st century is nuclear war. Although a number of wars have occurred during the over 70 years since World War II, nuclear weapons have not been employed in any war. However, the big powers have still competed to produce and stockpile nuclear weapons. In the train of the United States, the Soviet Union first invented nuclear weapons, followed by Britain and France in the 1950s, as well as China in the 1960s. Therefore, all the five permanent members of the United Nations possessed nuclear weapons. Later, India, Pakistan and Israel all tested and produced nuclear weapons. Both Iran and North Korea made attempts toward

nuclear weapons, but their futile efforts have caused many international disputes. By the 1990s, both the United States and the Soviet Union had stockpiled more than 10,000 nuclear weapons. Despite of demilitarization in recent years, each still possesses more than thousands of nuclear weapons. The stockpiles of Britain, France and China are about several hundred nuclear weapons. It is estimated that there are less than 1,000 at least medium-sized cities (each with a population of over 500,000) in the world. If all the nuclear weapons are “projected” to these 1,000 cities, each would be bombed at least 10 times. However, the key lies not in these cities, but in world wars. Scientists estimate that if there is a global nuclear war, the earth would be covered with mushroom clouds, causing a “nuclear winter” that would bring the earth back to the ice age. This would be a catastrophe for the entire mankind.

V. Environmental Change and Greenhouse Effects

Since the Industrial Revolution, the productivity of human beings has been significantly enhanced. One of the important factors was the development of new energy sources: coal and petroleum, which have caused additional emission of CO₂ after combustion, thus destroying the CO₂ balance in the atmosphere. In the agricultural society, CO₂ balance was maintained by the complementary emission of animals and plants: animals absorb oxygen and emit CO₂, while plants absorb CO₂ and emit oxygen through photosynthesis. Before the Industrial Revolution, the atmospheric CO₂ concentration maintained a dynamic equilibrium at approx. 280 ppm. Thereafter, the excessive combustion of fossil fuels and deforestation had brought an increase in the atmospheric CO₂ concentration to over 400 ppm by the 1990s. According to the forecast of the Met Office of Britain, it will reach 411 ppm in 2019. Increased CO₂ concentration causes greenhouse effects, abnormal climate, increased disasters, rapid ice melting at the North and South Poles, and rising sea levels, resulting in a significant reduction in land area and wiping out many island countries from the world map. The main culprit of the greenhouse effect was coal and petroleum combustion, which was not realized until the 1990s, more than 200 years after the Industrial Revolution. The exploitation and utilization of new materials, including organic materials (e.g., plastics) and chemical synthetic materials (e.g., pesticides), have not only enhanced economic yield, but also caused land/water/marine pollution, environmental changes, and even the disappearance of many species.

VI. Wealth Polarization between the Poor and the Rich Caused an Increasingly Wide Gap among Different States/Nations.

In the agricultural era, the inter-state or international wealth gap was not obvious; however, it has been increasingly widened ever since industrialization, leading to polarization between the poor and the rich. The international economic development gap is shown in Table 9:

Table 9 International Gap in Per Capita GDP (1000-2001) International Dollar, 1990

	1000	1500	1700	1900	1950	2001
Richest countries	450	1100	2110	4593	9651	27009
Poorest countries	400	400	400	462	377	371
Multiples	1.1	2.8	5.3	9.9	25.1	73.0

Source: *China Modernization Report*, 2005.

As Table 9 indicates, the wealth was basically evenly distributed in different countries in the world in 1,000 A.D.; in the early 18th century, the proportion of wealth of the richest countries to that of the poorest countries was already 5:1; it increased to 10:1 at the end of the 19th century, and 73:1 at the beginning of the 21st century. Note that the wealth is calculated on the basis of purchasing power evaluation. If calculated by the current USD price, the multiples would be as high as several hundred.

The economic development gap is also reflected in life expectancy per capita and education/cultural quality, as shown in Tables 10, 11 and 12:

Table 10 International Gap in Average Life Expectancy (1750-2000) unit: year

	1750	1820	1900	1950	2000
Max.	38	41	66	72	81
Min.	24	21	24	32	37
Proportion	1.5	2.0	2.8	2.3	2.2

Source: *China Modernization Report*, 2006.

Table 11 International Gap in the Compulsory Education Popularity Rate (or Enrolment Rate of Secondary Schools) (1950-2000) %

	1950	1960	1970	1980	1990	2000
Max.	70	86	102	127	120	154
Min.	1	1	1	3	5	6

Source: *China Modernization Report*, 2006.

Table 12 International Gap in the Enrolment Rate of Universities (1970-2000) %

	1970	1980	1990	2000
Max.	53	57	93	85
Min.	0	0	0	1

Source: *China Modernization Report*, 2006.

In the development of the human society, wealth polarization has caused many international social issues, e.g., excessive refugees, who would disturb the peace in rich countries, and terrorism, which is a directly related issue to be addressed. The proportion of wealth of the richest countries to that of the poorest countries has now exceeded 70:1. As the polarization is unsustainable, to a certain extent the gap would inevitably reach a turning point, and all countries in the world would come to an end. Now that we have entered the 21st century, the polarization has been carried down for more than 300 years, so it is time for us to bring about the turning point to narrow the wealth polarization.

VII. Where Does Modernization Take Mankind?

In summary, the 300-year modernization movement has made tremendous achievements in human development; on the other hand, it is faced with serious crises. In the 21st century, mankind has come to a crossroads, where we should decide whether to follow the original development pattern, which would impede human progress and lead mankind back to the Stone Age and even the destruction of the earth, or to explore a new mode of modernization to carry on human progress and open up a new age of universal prosperity, peace and progress.

According to the modernization model implemented in the past 300 years, firstly, the prevailing law of the jungle stood up in the interpersonal/interstate/international relationship, and the advanced industrialized countries strove for development by plundering colonial resources, and accumulated their wealth at the expense of perpetuating the poverty of other countries; secondly, the rapid increase in human productivity is based on the massive consumption of non-renewable resources and the destruction of the balance between man and nature; thirdly, human development has compressed the living space of other species, polluted the land, water and air, and destroyed the home of mankind. In a few words, human development followed the pattern of “Three Oppositions”, namely, oppositions between man and man, between man and nature, and between man and the earth. In other words, over the past 300 years, a few people (or countries) have accumulated their wealth at the cost of poverty of the majority; the rapid increase in human productivity has been achieved at the cost of plundering the earth, and the higher life quality and increased population have been obtained at the expense of destroying the balance between man and nature and even the home of mankind. If this development pattern remains unchanged, catastrophes and even devastations would follow.

So what is the way out? Is there any way to prevent catastrophes and even devastations from happening indeed? In theory, yes, as long as we change the modernization approach and transform the “Three Oppositions” into “Three Harmonies”, namely, harmonies between man and nature, between man and the earth, and between man and man (or between state/nation and state/nation). Ancient Chinese thinkers advocated the “harmony between man and nature” and put forward the idea that “harmony is most precious”. This philosophy applies to the modernization of the 21st century, which means we need to change the original modernization model and develop a new approach to the “harmony between man and nature, between man and earth, and between man and

man” (or between state/nation and state/nation).

However, it is not easy to implement the above-mentioned vision of “Three Harmonies”. “Global Harmony” and “World Peace” are the ideals of our ancestors, but the reality is that the world is becoming more and more diversified and restless. Poor countries and poor people are most eager but cannot afford to implement the new vision of “Three Harmonies”; on the other hand, since developed countries and rich people are the beneficiaries of the original development model, how would they take the lead in such a cause? In such a disorderly world, who would take the lead in promoting the implementation of the vision of “Three Harmonies”? This modernized vision of “Three Harmonies” seems hardly feasible.

However, we should never be pessimistic. The development of the original model took at least 300 years. It is even believed that its origination dated back to the Renaissance 600~700 years ago. Therefore, the development of the new model is expected to take several hundred years likewise. We can only progressively explore to avoid the destruction of the earth and mankind. There are still some tasks for our generation to complete within a few decades.

First of all, we should initiate a new ideological emancipation movement. The Renaissance Movement, which lasted for more than 300 years from the 13th century to the beginning of the 17th century, criticized theocracy and feudalism and advocated humanism, laying an ideological foundation for the global modernization after the 17th century. Under humanism, it is not God who dominates the universe, but man, who is the root of everything as well as the center of the world. It opposes feudal superstition and religious asceticism, while advocating scientific culture and hedonism, which was of great significance at that time despite of the historical limitations. The core of humanism lies in the human-centered philosophy or even individualism, and egoism is the morality. As we have seen, as the ideological basis for the modernization movement, it has now become an obstacle to further development. In order to promote the development of the global modernization movement, we must initiate a new round of ideological emancipation. As our ancestors mentioned, the new philosophy advocates building the harmony between man and nature, promoting global concordance, and uniting the whole world as one community, which still needs to be further refined and polished.

At the operational level, we should gradually reform and transform the existing international organizations, especially those wielding major resources, such as the G7, G20, NATO and EU, so that they could implement the new philosophy of “Three Harmonies”, which of course depends on those who are in charge. In such a way, there will be a turning point in the process of modernization. For example, if the member states of such organizations which wield a large amount of war resources do not provoke any war and even stand on the opposite side, would anyone dare to hang out the red flag? Nuclear war is feared by all. To avoid nuclear war, denuclearization is the first step, which should start from nuclear capable countries. That is, the United States and Russia should take the lead in denuclearization (by destroying the existing nuclear weapons, halting the production of nuclear weapons and promising not to use nuclear weapons against non-nuclear states). If the

nuclear powers (especially the superpowers) take the lead, it would be possible to avoid nuclear war. The control of greenhouse effects and the prevention of polarization would also be realized, as long as rich-country organizations (e.g., G7) give priority to exploring how to promote the development of the poorest countries, rather than facilitating their own development and measures. For example, the United States, claiming itself as the richest and most democratic country in the world, should consider how to help the poorest countries with a population of 300 million (equivalent to the total population of the United States) to get rid of poverty and narrow their gap, rather than to seek monopolization. In such a way, other rich countries would catch up, and the polarization would be finally alleviated.

Besides, it is suggested to reform and improve the United Nations so that it can gradually implement governmental functions and ultimately become the global government capable of solving any problems in implementing the vision of “Three Harmonies” at the institutional level. In response to the birth of atomic bombs, some scientists proposed to establish a global government which, however, was ignored at that time. Now it seems this is still the best approach to resolving the global crisis and maintaining world peace and common prosperity. It may take a long way to turn the United Nations into a global government (maybe 200~300 years). However, in real terms, it can be gradually endowed with certain functions, such as poverty alleviation and carbon emissions reduction, which of course require the permanent member states, rich countries and world powers to take the initiative in, e.g., proposing disparity reduction objectives and indicators, breaking down and assigning the tasks to the top 20 richest countries, and implementing targeted poverty alleviation in the 40 poorest countries. For the cessation of hostilities, especially denuclearization (demilitarization), we need to determine the goals and develop a road map, in which the permanent members of the United Nations and the nuclear capable states should take the initiative.

Of course, this is an extremely herculean task. From a realistic point of view, it might be a daydream, but it's better to dream than never! The United States dreams an American Dream, and China also dreams a Chinese dream. Let us think about the bright future of mankind. We might as well dream a world dream. Where there is a dream, there is hope. As Chinese writer Lu Xun has noted, originally there was no path in the world, but as long as many people have walked upon it, a path comes into being. It can be concluded that man is the root of everything. Perhaps the same is true of dreams. The dream of maintaining world peace and global concordance and uniting the whole world as one community has long existed, but too few people cherish such a world dream, and such people have always ended up being laughing stocks. This is why dreams remain dreams. As long as the world dreamers increase, a turnaround would eventually be effected.

References:

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