

Every country has its customs (English proverb), and every field has its speciality. Modernization happens in all fields of human civilization, such as the spheres of economy, society, politics, culture, natural environment, and human self. Field-specific modernization is an important part of modernization science (Fig. 6.1) and interweaves with staged and stratified modernization. In general, modernization in different spheres has both commonality and difference, and the core theory of general modernization has somewhat different applicability in different spheres. Country is the basic unit for modernization, and modernization of each sphere is closely related with national modernization.

6.1 Economic Modernization

Economic modernization means the modernization of the economic sphere. It is a form of expression of the modernization phenomenon in the economic field. It comprises staged and stratified economic modernization, modernization of economic subspheres and sectors (Fig. 6.2). In developing countries, economic modernization plays prominent roles. It is both an important basis for modernization and also a main impetus for modernization.

6.1.1 Studies

Economic modernization study is a study on the modernization in the economic sphere and also a component of modernization study. Economic modernization study, which began in the early eighteenth century, can be analyzed from three perspectives: the past, the present, and the future.

There are no unified definitions about economy and economic sphere. In general, economy means the activities relating to the production, distribution, and consumption of goods and services. Its extension includes stratified economy, economic process, economic system, and economic environment (Fig. 6.3). Economic sphere

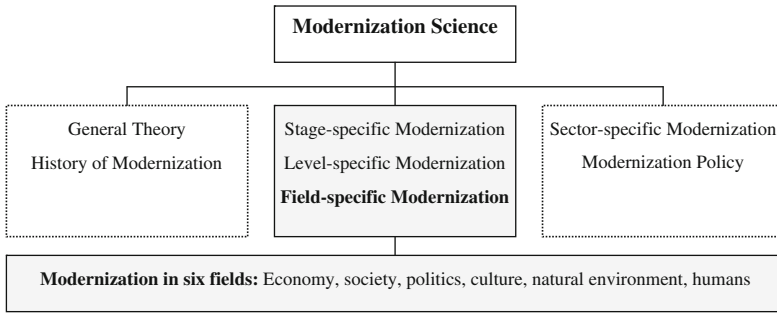


Fig. 6.1 Positioning and structure of field-specific modernization

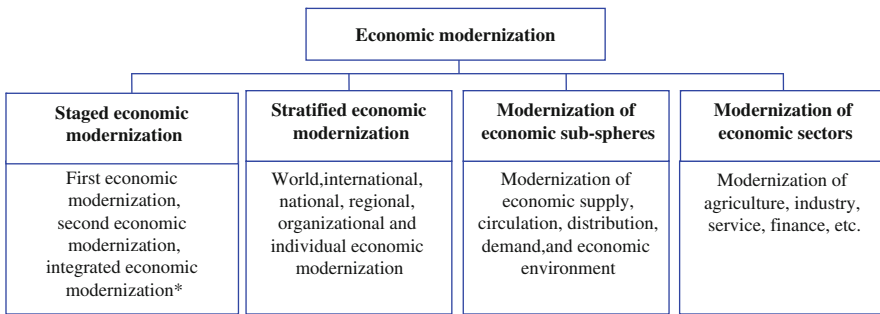


Fig. 6.2 Objects of economic modernization study. Note: (*Asterisk*) Integrated economic modernization means a coordinated development of twice economic modernizations, which is a basic path of economic modernization in developing countries

is a sphere of human civilization, and also a sphere in which scarce or limited resources are used to produce valuable goods and services, carry out distribution, and meet people’s consumer demand. Economic modernization is a short term for modernization of economic sphere.

6.1.1.1 Research Paradigm

The object of economic modernization research is the modernization of the economic sphere, including the modernization of economic supply, circulation, distribution, demand, and environment and the modernization of the world, national, and regional economies. The contents of economic modernization research include the modernization of economic behavior, structure, system, and ideas and also the process, result, dynamics, and model of economic modernization. They can form a research matrix (Table 6.1). The objects of economic modernization research also include staged economic modernization, modernization of economic sectors, interaction between economy and modernization, etc.

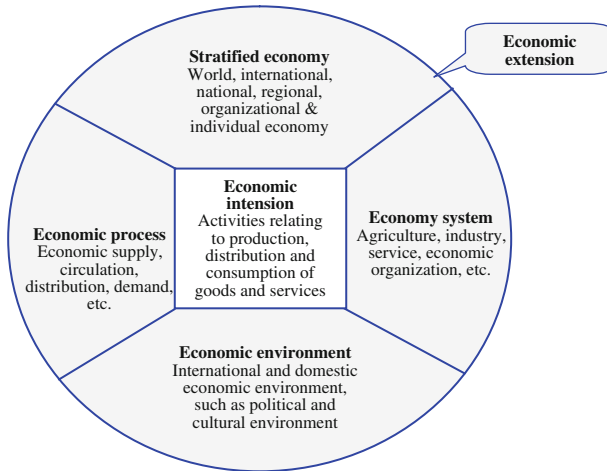


Fig. 6.3 Operational definitions of economic intension and extension

Table 6.1 Matrix of economic modernization study

Content		Object		
		Economic sphere	Economic supply, circulation, distribution, demand, and environment	World, national, and regional economies
		Economic modernization	Modernization of five economic subspheres	Economic modernization on the three levels
Element	Behavior	Modernization of economic behavior, structure, institution, and ideas	Modernization of economic behavior, structure, institution, and ideas in the five economic subspheres	Modernization of economic behavior, structure, institution, and ideas on the three levels
	Structure			
	Institution			
	Idea			
Aspect	Process	Process, result, dynamics, and model of the economic modernization	Process, result, dynamics, and model of economic modernization in the five economic subspheres	Process, result, dynamics, and model of economic modernization on the three levels
	Result			
	Dynamics			
	Model			

Note: economic supply involves input, output, production, cost, effectiveness, technology, system, etc. Economic circulation involves market, trade, logistics, finance, and so on. Economic distribution involves income distribution, taxation, transfer payment, etc. Economic demand involves consumption, investment, savings, government spending, net export, etc. Economic environment involves domestic economic environment (political, social, cultural, and ecological environment) and international economic environment. Economic modernization study also covers many other contents, such as staged economic modernization, modernization of economic sectors, analysis of economic frontiers, economic trend, economic frontier process, economic catch-up process, international competition, international economic gap, and interaction between economic modernization factors and between different spheres

Source: RGCMS (2005)

Economic modernization study is a part of modernization study in economic sphere and can use the methodology of modernization study. It uses diverse analytic methods, such as time-series analysis, cross-sectional analysis, process analysis, case analysis, qualitative analysis, quantitative evaluation, and coordinate analysis. Time span can cover a whole process or a specific period of time, and the scope can be the world, a country, or a region. The purposes include academic and policy ones. Research for different purposes can have different unique features.

6.1.1.2 Historical Facts

Over the past three centuries, economic modernization has been like a surging tide, wave upon wave. Specifically, the first three waves of economic modernization led to a transition from agricultural economy to industrial economy, and the fourth wave is promoting a transition from industrial economy to knowledge economy. Each wave has been driven by important inventions and technological innovations, and each system innovation has caused a change in economic form. The twenty-first century is expected to experience two economic waves. Each of the six economic modernization waves has had unique features (Table 6.2). *The China Modernization Report 2005: Economic Modernization Study* (RGCMS 2005) contains systematic analysis of economic modernization process, facts, and enlightenments as follows.

Table 6.2 Two major stages and six waves of economic modernization

Wave	Approx. time	Core content	Main feature	Annotation
First	1763–1870	First industrial revolution	Mechanization, steam engine, and colonial effect	<i>First economic modernization</i>
Second	1870–1945	Second industrial revolution	Electrification, internal combustion engine, and trade effect	Industrialization, marketization, deagriculturalization, nationwide market
Third	1946–1970	Third industrial revolution	Automation, computer, and Cold War effect	
Fourth	1970–2020	Knowledge revolution	Informatization, greening, and knowledge effect	<i>Second economic modernization</i>
Fifth	2020–2050	New biological revolution	Life engineering, nanotechnology, and new biological effect	Intellectualization, informatization, de-industrialization, market globalization
Sixth	2050–2100	New physical revolution	Super-transport, culture and experience, new physical effect	

Note: the time span of the second wave included the economic crisis and adjustment during the 1914–1945 period; the knowledge effect included the high-tech revolution; the fifth and sixth waves are forecasts, which will be determined by the future development of science and technology and that of culture. Knowledge revolution includes the information and ecological revolution

Source: RGCMS (2005)

(1) Process Analysis

First, the first wave of economic modernization. It mainly included the first industrial revolution, the European agricultural revolution, and the transport revolution. The main expressions were sustained economic growth, lower agricultural proportion, higher industrial proportion, integration of nationwide markets, and spread of industrial technologies and systems to other economic sectors. The main impetus was technological invention and innovation, colonial effect, overseas trade, and capital accumulation. During the 1763–1825 period, industrial revolution occurred mainly in Britain, even though some other European countries and the United States were “learning quietly.” In 1825, Britain revoked the law banning the export of machinery, and hence, industrial revolution began to spread to other parts of Europe. Belgium, France, Germany, and other continental countries were the first to benefit. They were followed by the United States and the overseas colonies of Europe, and then by Russia and Japan. In 1870, about five countries were industrialized countries or countries with a fairly high level of industrialization. They were Britain, France, Belgium, and Germany in Europe and the United States in America. Britain became the target copied and chased by many countries.

Next, the second wave of economic modernization. It included both the spread of the first industrial revolution and the surging of the second industrial revolution. And the second industrial revolution represented the nucleus and frontier of the second wave. The two industrial revolutions had both commonality and difference. The commonality was that they were all driven by technological inventions and technological and system innovations. The difference was that the center of the second industrial revolution had shifted from Britain to the European continent and North America. While the first industrial revolution was based on technology and featured coal, steam engine, and mechanization, the second industrial revolution was based on science and featured electricity, internal combustion engine, and electrification. With the advance of the second wave, the world economic order underwent changes. Germany overtook Britain to become the largest industrial country in Europe, and the United States became the strongest industrial power in the world. Japan in Asia also scored marked progress in industrialization. In the early years of the twentieth century, roughly six countries already completed industrial revolution. They were Britain, the United States, Germany, France, Belgium, and the Netherlands. Many other countries, such as the Scandinavian countries, Japan, and Russia, were in the initial stage of industrialization (Habakkuk and Postan 1965). Industrial revolution spread mainly to Europe, America, Australia, New Zealand, and Japan.

The huge success of the second wave of economic modernization led to a reshuffle of the world order. The ensuing three decades (1914–1945) constituted a special period of human history, which experienced two World Wars and one global economic crisis, the adjustment and formation of modern political system, economic system, economic structure, science and technology, and modern lifestyle and the shift of the center of industrial civilization from Europe to North America. While free market economy moved to failure, planned economy and mixed market economy embarked upon the historical stage. Economic

modernization was basically achieved in industrial countries in the course of wars, depression, and reform and continued to spread to other parts of the world.

Third, the third wave of economic modernization. It included the third industrial revolution and the economic modernization in agricultural countries. The former was the nucleus and frontier of the third wave of economic modernization, while the latter represented the beginning of the first wave of economic modernization in agricultural countries. The overlapping of the two produced many new changes and spread economic modernization to the whole globe. Economist Angus Maddison (1995) held that the 1946–1970 period represented the golden time of the economic history. While the global economy entered a fastest-growing period, the development of industrial economy reached its climax. This economic development can be attributed to many reasons. In particular, the efficient system of industrial economy, the thriving international trade, and the third industrial revolution played important roles. Of course, the postwar economic recovery, the expansion of investment scale, and the spread of industrialization also played inestimable roles.

The technological innovations in the third industrial revolution covered artificial synthesis, electronic industry, industrial automation, new materials, new energies, and aerospace industry. During this period, western Europe and Japan outpaced the United States in economic growth, with their labor productivity and GDP per capita being close to that of the United States. The economies of industrial countries demonstrated a phenomenon of convergence. The changes in economic structure were equally evident, with the proportion of agriculture in GDP continuing to fall, the proportion of industry beginning to fall, and the proportion of service industry rising rapidly.

The 1946–1970 period was a Cold War period, featuring confrontation between the Soviet Union and the United States. Economic modernization also carried the mark of Cold War. During this period, the outperforming countries and regions included industrialized countries such as Japan, Italy, and Finland and emergent industrialized countries and regions such as South Korea, Chinese Taiwan, Chinese Hong Kong, the Philippines, Malaysia, Singapore, and Greece. They were all in the “forward positions” of Cold War. Except countries in South America and South Europe, all other emergent industrialized countries and regions were in the “forward belts” of Cold War.

Fourth, the fourth wave of economic modernization. It included the knowledge revolution on economic frontiers, and the economic modernization in late-coming countries. While the first three waves were all driven by industrial revolution, the fourth was driven by knowledge revolution. Industrial revolution led to a rising proportion of industry and a falling proportion of agriculture in GDP, but knowledge revolution led to a falling proportion of industry and a rising proportion of knowledge industry. For this reason, this wave was an economic revolution in nature and affected the whole world.

Knowledge revolution at least included science revolution, high-tech revolution, information revolution, learning revolution, ecological revolution, and national innovation systems. Knowledge revolution and knowledge economy originated from the United States and spread rapidly to Europe and other parts of the world.

Because of knowledge penetration and attraction, the rise of knowledge economy was far faster than that of industrial economy. People began to realize the significance of industrial revolution a century later, but recognized and forecast the future of knowledge revolution almost immediately after it occurred. Based on the development cycle of information technology, the fourth wave in developed countries is expected to come to an end around 2020.

Fifth, the fifth and sixth waves of economic modernization. If the first four waves of economic modernization have become universally recognized reality, the fifth and sixth waves are merely a hypothesis. The fifth wave is expected to occur during the 2020–2050 period. Based on a new biological revolution, this wave should include the popularization of biotechnology and the application of nanotechnology and new energies. By then, biological plants will replace most of the physical plants, and biological production will replace most of physical manufacturing in some fields. Biotechnology, which concerns the treatment, transplant, repair, and improvement of human bodies and other organisms, will become the leading industry. The sixth wave is expected to occur during the 2050–2100 period. Based on a new physical revolution, this wave should include the overall thriving of cultural economy and experience economy. Super-manufacturing will replace most of human labor, and super-transport will bring human beings to where they want to go. Cultural life and spiritual experience will become the leading industry.

(2) Economic Modernization and Technological Change

Technological and institutional changes will be two key factors for economic modernization. All the six waves of economic modernization have been driven by technological innovation, and major inventions and innovations are closely linked with economic cycles (Table 6.3).

First, the technological innovations in the first wave. These innovations were mainly in six spheres: textile industry, coal industry, metallurgical industry, machine-building industry, transport industry, and communications industry. In particular, the invention and wide application of steam engines provided industries with power and brought an end to human dependence on animal, wind, and hydraulic powers. They also made the rapid development of many industries possible. This revolution featured light and textile industries and machine-building industry.

Next, the technological innovations in the second wave. These innovations were mainly in six industries: power industry, iron and steel industry, energy and petrochemical industry, coal chemical industry, transport industry, and telecommunications industry. This revolution featured iron and steel industry, petrochemical and heavy industry, and transport industry. The Americans invented standardized production technology, auto production and assembly line and “scientific management” method, which greatly raised the labor productivity of workers. Some major technological innovations also occurred in the adjustment period of economic modernization, such as agricultural technology, mining technology, modern transport industry, home appliance industry, chemical industry, and power industry.

Table 6.3 Major inventions, innovations and Kondratieff economic cycle

Cycle	Ascending and descending periods	Major inventions	Major innovations	Development stages
First	1790–1815 1815–1845	Electric motor, generator, steel, telegraph, and railway	Mechanization, textile, iron, steam engine, and railway	First industrial revolution
Second	1845–1873 1873–1890	Internal combustion engine, automobile, telephone, washing machine, refrigerator, aspirin, and man-made silk	Electrification, electric motor, generator-plant, chemicals, steel, and railway	Second industrial revolution
Third	1890–1929 1929–1948	Aircraft, production line, sulfa drug, semiconductor, computer, color television, and atomic bomb	Electricity, automobile, aircraft, and home appliance	Two World Wars
Fourth	1948–1973 1973–1992	Communications satellite, laser, microprocessor, contraceptive drug, space flight, DNA recombination, video recorder, and Internet	Automation, electronic computer, atomic energy, personal computer, and space flight	Third industrial revolution and first information revolution
Fifth	1992–2020 2020–2040	Gene mapping, nanotechnology, quantum computer, and biological chip	Internet, e-business, biotechnology, and software	Second information revolution and new biological revolution

Note: It is mainly based on the thoughts of Duijn (1983). Different countries and different scholars differ slightly in dividing the time of cycle. The first industrial revolution corresponds to the first wave of economic modernization, the second industrial revolution corresponds to the second wave of economic modernization, the third industrial revolution corresponds to the third wave of economic modernization, and the first and second information revolutions correspond to the fourth wave of economic modernization

Third, the technological innovations in the third wave. These innovations were mainly in six spheres: artificial synthesis technology, electronic industry, industrial automation, new materials, energy industry, and transport industry such as expressway, automobile, and aerospace industry.

Fourth, the technological innovations in the fourth wave. These innovations were mainly in three spheres. In the sphere of information technology, the innovations included microcomputer, Internet, mobile communications, e-business and e-government, new computing technology, and human–computer interaction technology. In the sphere of biotechnology, the innovations included DNA recombination, cloning technology, cell engineering, enzyme engineering, protein engineering, and gene engineering. In the sphere of other high technologies, the innovations included material technology, advanced manufacturing, advanced

energy, space technology, automation technology, environmental technology, photoelectricity, marine technology, etc.

Fifth, the technological innovations in the fifth and sixth waves. The main innovations in the fifth wave would be in three spheres: life engineering, nanotechnology, and new energy. The main innovations in the sixth wave would also be in three spheres: super-manufacturing, super-transport, and cultural and spiritual experience. Naturally, these are only a forecast.

(3) Economic Modernization and Institutional Change

The change of economic institutions is an important content of economic modernization. In general, institutions are a collection of rules, procedures, ethics, and customs that govern human behavior (North 1981). Basic economic institution is the core institution governing economic activities and the ownership and allocation of production factors and the distribution of production fruits. In the age of primitive economy, the basic economic institution was primitive public ownership, under which production factors were publicly owned and production fruits were equally distributed. Private ownership appeared in the transitional period of the age of primitive economy, but the economic institution still carried the flavor of public ownership. In the age of agricultural economy, the basic economic institution was agricultural economy and agrarian institution, including slavery, manorialism, nomadism, tenancy, etc. The production factors were privately owned, and the slave owners (manor owners or landowners) determined the allocation of production factors and the distribution of production fruits. In the age of industrial economy, the basic economic institution is market economy, in which market determines the allocation of production factors and the distribution of incomes. The basic economic institution in the age of knowledge economy is knowledge economy, which is still in the process of formation (Table 6.4).

The basic economic institution changes from time to time and, generally, has several subinstitutions, such as nomadism in the age of agricultural economy and planned economy, mixed economy, welfare economy, and socialist market economy in the age of industrial economy. From the perspective of institutional change, the transition from agricultural economy to industrial economy represented first economic modernization, and the transition from industrial economy to knowledge economy represents second economic modernization.

(4) Economic Modernization and Change of Economic Form

The change of economic form is a macroform of expression for economic modernization. From the birth of mankind to the end of the twenty-first century, different “economic times” have different economic activities, the economic activities representing the then advanced level of productive forces have different features, and their core technologies, core industries, basic modes of production, structures, institutions, and concepts are essentially different. The economic activities in the four economic ages reflecting the advanced level of productive forces can be classified into different economic forms, or basic economic forms for short (Table 6.5). Different economic forms have way different industrial structures

Table 6.4 Basic economic institutions in economic history

Economic time	Age of primitive economy	Age of agricultural economy	Age of industrial economy	Age of knowledge economy
Historical time	Birth of mankind ~3500 BC	3500 BC–AD 1763	1763–1970	1970 to approx. 2100
Economic form	Primitive economy	Agricultural economy	Industrial economy	Knowledge economy
Basic institution	Primitive public ownership	Land institution	Market institution	Knowledge institution (still in process of formation)
Production	Collective labor	Agricultural production	Industrial production	Flexible work and knowledge production
Circulation	Exchange in kind	Regional trade and tariff	National market	Globalization and low tariff
Distribution	Equal distribution	Distribution according to power and land ownership	Distribution according to capital or labor	Distribution according to contribution and regulation according to demand
Consumption	Real-time consumption	Voluntary consumption	Taxed consumption and high consumption	Green consumption and reasonable consumption
Environment	Nature worship	Nature adaptation	Nature transition	Ecological–economic coordination

Source: RGCMS (2005)

and employment structures (Fig. 6.4). The transitions from agricultural economy to industry and that from industrial economy to knowledge economy represent two stages of economic modernizations.

(5) Basic Facts of Economic Modernization

First, the facts of economic supply. In the past three centuries, productivity has been continuously rising, but the sustainability of productivity growth has varied in different countries. In the meantime, the international gap in productivity has been widening, the world frontier of productivity has been shifting, and the shift in the world status of national economy has followed certain probability. After the nineteenth century, the unemployment rate was long fluctuating, and the economic cycle was long in existence. In the latter half of the twentieth century, the amplitude of vibration of the economic cycle became smaller. In the late years of the twentieth century, the effectiveness of resource use became higher, the contribution of knowledge economy to economic growth in developed countries became higher, and the contribution of capital and labor to economic growth became lower. Meanwhile, labor quality and infrastructure were in positive correlation with productivity.

Next, the facts of economic structure. After the eighteenth century, the ratio of agricultural economy to national economy dropped (deagriculturalization), and the

Table 6.5 Basic economic forms in economic history

Economic time	Age of primitive economy	Age of agricultural economy	Age of industrial economy	Age of knowledge economy
Historical time	Birth of mankind ~3500 BC	3500 BC–AD 1763	1763–1970	1970 to around 2100
Mode of production	Collective hunting and gathering	Family-based small-scale production	Industrial large-scale production	Knowledge-based global production
Core technology	Food-gathering technology	Food-producing technology	Material-producing technology	Production and application of knowledge and information
Leading industry	Natural food acquisition	Food production	Material production and service	Knowledge production and service
Basic structure	Over 95% for hunting and gathering	Over 90% for agriculture and animal husbandry	Over 50% for industry	Over 50% for knowledge industry
Basic institution	Primitive public ownership	Slavery and feudalism	Market economy	In process of formation
Basic concept	Equal distribution	Distribution according to power and land ownership	Distribution according to capital or labor	Distribution according to contribution
Economic form	Primitive economy	Agricultural economy	Industrial economy	Knowledge economy

Source: RGCMS (2005)

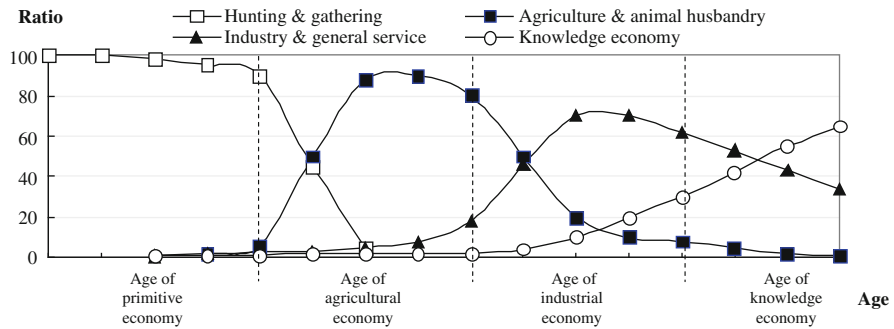


Fig. 6.4 Change and replacement of economic forms (using labor structure change as example). Source: He (2003)

ratio of industrial economy to national economy in developed countries experienced rising and falling periods (industrialization and de-industrialization). After the twentieth century, the ratio of service economy to national economy became higher (servicization or dematerialization), and the ratio of knowledge economy became higher in developed countries.

Third, the facts of economic circulation. After the eighteenth century, economy became growingly marketized and commercialized and international trade increased. After the twentieth century, the average tariff rate became lower. In the late years of the twentieth century, the ratio of money supply (M2) to GDP and the ratio of domestic credit were in positive correlation with national income per capita, and the ratio of international trade was not in tangible positive correlation with per capita national income.

Fourth, the facts of economic distribution. After the nineteenth century, the inequality in the income distribution rose first and dropped afterward in developed countries and then fluctuated in some countries (Fig. 6.5). After the twentieth century, the ratios of government taxation and transfer payment became higher. In the late years of the twentieth century, the equity in income distribution, the ratio of government revenue, the ratio of tax revenue, and the ratio of transfer payment were in positive correlation with per capita national income.

Fifth, the facts of economic demand. In the twentieth century, the ratio of consumption to the GDP became lower. In the late years of the twentieth century, the ratio of family consumption was in negative correlation with per capita national income, while the ratio of government consumption and the ratio of knowledge capital investment were in positive correlation with per capita national income.

Over the past three centuries, the economic behaviors, structure, institutions, and concepts and the key technologies, modes of production, and leading industries have undergone profound changes. And these changes were uneven. As the international gap in the income per capita widened, underdeveloped countries are in a state of relative poverty.

(6) Historical Enlightenments

First, economic modernization is relatively orderly and can be expected. In general, the world economic changes in the twentieth century were relatively continuous and regular. In particular, both economic effectiveness and the effectiveness of resource use were on the rise, and both the industrial and employment structures became deagriculturalized, serviced, and dematerialized and moved from industrialization to de-industrialization.

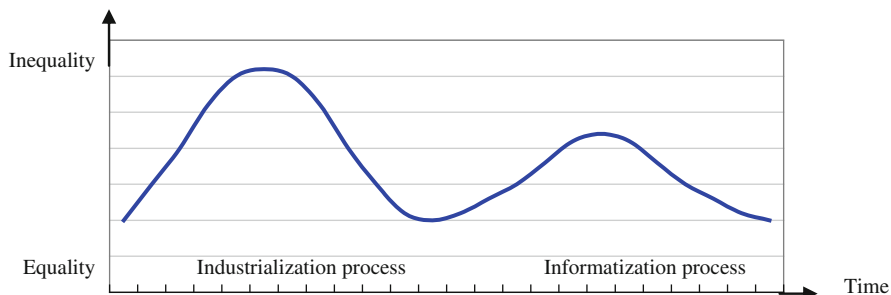


Fig. 6.5 One form of change in income inequality in course of economic modernization (one model). Source: RGCMS (2005)

Next, economic modernization is a process that can be stopped, interrupted, or retrograded. Economic modernization across the world is a continuous and irreversible process. But economic modernization in a specific country or region can have diverse forms of expression, can be continuous or discontinuous, and can stop or interrupt. It can have a temporary or long-term retrogression.

Third, economic modernization is a process in which the international gap in economic effectiveness widens (polarization of economic effectiveness). During the 1700–2001 period, the relative gap in per capita GDP (at 1990 price of PPP international dollar) widened from 15-folds to 73-folds, and the absolute gap widened about 15-folds from \$1,700 to over \$26,700, and the compound gap widened at an average annual rate of 0.92%. The huge gap in per capita income appeared in the past three centuries will continue to widen instead of narrowing in the next century.

Fourth, economic modernization is a process featuring an international convergence of economic structures. Over the past three centuries, the ratio of agriculture continued to fall, the ratio of service industry continued to rise, the ratio of industry experienced both rising and falling periods (Table 6.6), and the ratio of knowledge industry continued to rise. As different industries have a limit value for their ratios, industrial and employment structures tended to gradually converge. Naturally, convergence does not mean complete identity. Diversity still exists and convergence is relative.

Fifth, economic modernization is a process of progress. Over the past three centuries, economic modernization was both a process with growing labor productivity and growing effectiveness of resource use. Meanwhile, it was also a process with growing economic welfare and economic equity. We have no reason to suspect that this trend will interrupt or reverse in the next century. So economic modernization is progressive through the process of progress may have all sorts of problems and even catastrophic problems.

Sixth, economic modernization is a process full of risks. Economic modernization is not free; it requires costs and prices. In the course of economic modernization, old technologies and old industries will lose their original economic values and statuses, and some industries and population groups will suffer losses because of the replacement of core technologies and leading industries. And the accelerated technological aging and industrial transfer will increase the numbers of sufferers and beneficiaries and in turn sharpen economic and social contradictions. In the meantime, as Earth has limited economic resources, the rivalry for economic resources can also sharpen international and domestic contradictions. On the

Table 6.6 Industrialization and de-industrialization of American economy

Indicator	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
Ratio of industrial added value (%)	26	27	29	33	35	39	37	33	32	27	24
Ratio of industrial labor force (%)	30	32	34	34	33	37	34	31	27	22	20

Source: RGCMS (2005)

other hand, science and technology is a double-edged sword. Technological risks always exist and may expand. The process of economic modernization requires risk control and crisis management.

Seventh, economic modernization is not a completely spontaneous process. Economic system is a self-organizing system and can operate under certain marginal conditions. However, economic modernization is a process of global competition. Both developed and developing countries inevitably seek favorable positions in fierce international competition and strive for more strategic resources and market spaces if they want to realize economic modernization and reach and maintain their advanced levels in the world economy. This competition is an uphill struggle. Economic modernization is a human-controlled open system, instead of a completely spontaneous process.

Eighth, the section structure of economic modernization is correlated to the structure of history. The result of time-series analysis of economic variables is largely consistent with that of section analysis. In a sense, the section structure of an economy can be used as a “time epitome” of the time-series changes of the economy. In other words, the “time structure” of economic changes can be converted into the “section structure” of economic changes for analysis. It also indicates that combining time-series analysis with cross-sectional analysis is an effective method for economic modernization research.

6.1.1.3 Present State and Prospect of Economic Modernization

(1) Present State

First, the level of economic modernization. In 2002, about 24, or 18%, of 131 countries had completed their first economic modernization. Another 18 countries or 14% of all had entered the process of second economic modernization. If classified according to second economic modernization index, 18 countries including the United States were developed countries, nine countries including Spain were moderately developed countries, 24 countries including Brazil were preliminarily developed countries, and 79 countries including China were underdeveloped countries (RGCMS 2005).

Next, the stage of economic modernization. In 2002, six countries including the United States had entered the developing stage of second economic modernization, 12 countries including Sweden were in the starting stage of second economic modernization, 11 countries including South Korea were in the transitional stage of first economic modernization, 22 countries including Greece were in the maturing stage of first economic modernization, 29 countries including China were in the developing stage, 26 countries including India were in the starting stage, and 14 countries including Mali remained traditional agricultural economies (Fig. 6.6).

Third, the world frontier of economic modernization. In 2002, the world top ten countries in terms of second economic modernization index were respectively the United States, Switzerland, Norway, Denmark, Sweden, the Netherlands, Japan, France, Britain, and Belgium. Also in the year, six countries had entered the developing stage of second economic modernization. They were the United States, Denmark, the Netherlands, France, Britain, and Australia.

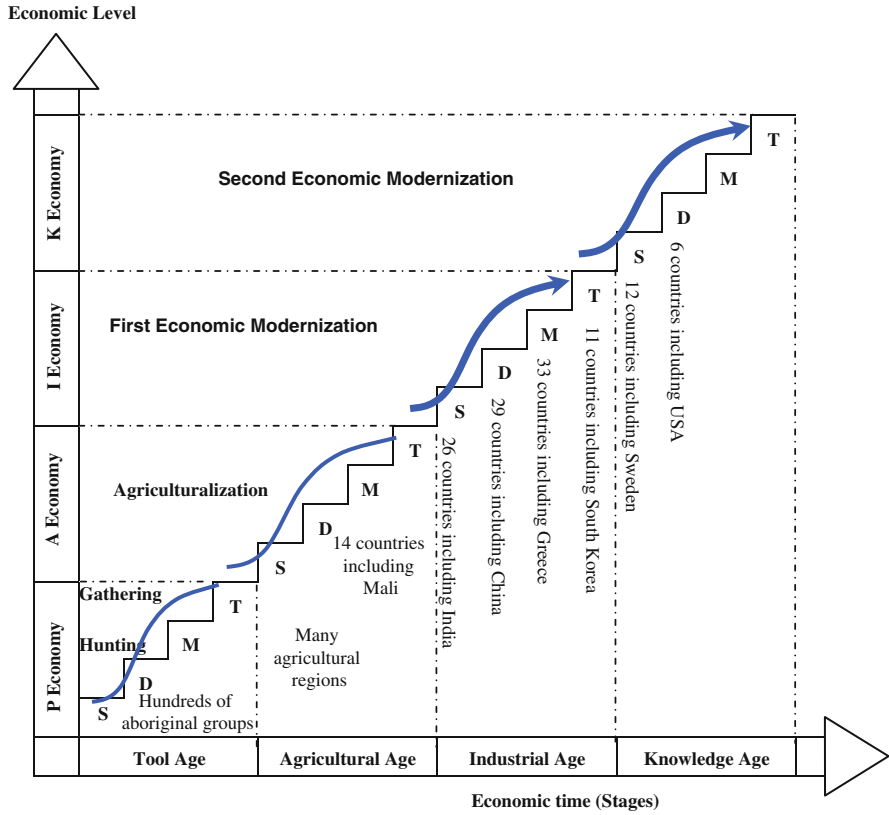


Fig. 6.6 Coordinates of world economic modernization in 2002. Note: P, A, I, and K refer to primitive, agricultural, industrial, and knowledge, respectively. S, D, M, and T refer to the start, developing, mature, and transition stage, respectively. Economic time refers to the time based on the frontier track of economic development. Source: RGCMS (2005)

Fourth, the achievement of economic modernization. In the latter half of the twentieth century, the number of countries that had completed first economic modernization rose from 1 to 24, and the number of the countries that had entered second economic modernization rose from 0 to 18. The direction of world economic modernization underwent a major change, with economic modernization in developed countries moving from the stage of industrialization to that of de-industrialization.

Fifth, the status change of economic modernization. During the 1950–2002 period, 21 countries including Japan saw their economic status upgraded, and six countries including Venezuela saw their economic status downgraded. In the four decades from 1960 to 2002, 15 countries saw their economic status upgraded, and five saw their economic status downgraded. In particular, Japan, Singapore, and South Korea saw their economic status jumped two grades straight.

Sixth, the international gap of economic modernization. During the 1970–2002 period, 36 countries including Argentina posted a negative growth in their first economic modernization index, and ten countries including Zambia posted a negative growth in their second economic modernization index. The international gap between developed and underdeveloped countries widened.

(2) Prospect

First, the time required to complete first economic modernization. At the average annual growth rate during the 1970–2002 period, moderately developed countries on average require 85 years, and the world on average requires 53 years to complete first economic modernization.

Second, the world's advanced level of economic modernization. At the average annual growth rate during the 1970–2002 period, second economic modernization index of developed countries in 2050 will be twice as high as in 2002, and the index in 2100 will be twice as high as in 2050.

Third, the world average level of economic modernization. The world average level is about 50 years behind the average level of developed countries, and the average level of the world economy in 2050 will be equivalent to the average level of developed countries in 2000.

Fourth, the national level distribution of economic modernization. At the average annual growth rate during the 1970–2002 period, 46 countries will complete first economic modernization, and 43 countries will enter second economic modernization by 2050. Sixty-two countries will complete first economic modernization, and 58 countries will enter second economic modernization by 2100 (Table 6.7). If the growth rate change, and the situation will change.

6.1.2 Theories

Economic modernization theories are those explaining the phenomenon of economic modernization and constitute a branch of modernization theories. Currently, there are two collections of theories, namely, classic economic modernization theory and broad-sense economic modernization theory.

6.1.2.1 Classic Economic Modernization Theory

As an important branch of classic modernization theory, classic economic modernization theory was formed in the 1950s and 1960s. The publication of *The Stages of*

Table 6.7 Estimated level of world economic modernization in twenty-first century

Item	2002	2010	2020	2030	2040	2050	2060	2080	2100
Number of countries entering second economic modernization	18	20	25	31	36	43	44	51	58
Number of countries completing first economic modernization	24	29	35	42	44	46	49	54	62

Source: RGCMS (2005)

Table 6.8 Structure of classic economic modernization theory

Category	Theory	Main content	Representative
General theory	Core theory	Basic law and features of classic economic modernization	
Branch theories	Economic stage theory	Five stages of economic growth	W. W. Rostow
	Industrialization theory	Definition, process, structure, impetus, and model of industrialization	A. Gerschenkron
	Sector economic modernization	Agricultural modernization, industrial modernization, financial modernization, etc.	
Related theories	Economic growth theory	Classical economic growth, neoclassical growth, modern growth, etc.	S. S. Kuznets
	Economic development theory	Classical and neoclassical development, innovation, dependent development, etc.	A. Lewis and J. Schumpeter
	Economic structure theory	Dualist economic development model, development models, etc.	A. Lewis and H. Chenery
	Developmental economics	Economic growth and economic development in developing countries	
	Other related theories	Institutional economics, technological economics, comparative economic history, etc.	

Source: RGCMS (2005)

Economic Growth published in 1960 by American economist Walt Whitman Rostow was an important mark for the birth of classic economic modernization theory. So far, classic economic modernization theory has not had a universally recognized and complete theoretic system. Besides, this theory has diverse and inseparable links with the economic theories of grand magnitude and long history. In fact, classic economic modernization theory is a collection of academic thoughts about classic economic modernization (Table 6.8).

(1) General Theories of Classic Economic Modernization

The China Modernization Report 2005 analyzed the thoughts and theories regarding classic economic modernization and summarized the general theory of classic economic modernization (Table 6.9), including the definition, process, outcome, drive force, and model of classic economic modernization.

Classic economic modernization is not in isolation. It is subject to the influence of politics and culture and interacts with classic social modernization. At the same time, it is constrained by the level of science and technology and by international relations. It is both a global economic revolution and a world economic competition. It takes a country as the basic unit and the world as the competition arena.

Economic growth does not equal to economic development, economic development does not equal to economic modernization, and industrialization does not equal to economic modernization. Economic modernization covers not only economic growth and industrialization but also the changes in the world economic frontier and in the international economic gap.

Table 6.9 General theories of classic economic modernization

Aspect	Basic content
Definition	Classic economic modernization refers to the revolutionary change that occurred in the economic sphere since the eighteenth century, which included the comprehensive industrialization of the national economy, the sustained growth of labor productivity, and the continuous intensification of international economic competition
Process	Classic economic modernization is a historical process, which is both a process of industrialization of production model, production technology, economic structure, economic system, and economic concept and also a process of sustained growth of labor productivity and national income. It is also a process of international competition to catch up, reach, and maintain the world's economic advanced levels. The process of classic economic modernization generally comprises four stages (starting, developing, maturing, and transitional). And the process of industrialization generally comprises three stages (early stage, middle stage, and late stage)
Outcome	The result of classic economic modernization comprises the transition from agricultural economy to industrial economy; the formation and popularization of the market economy concept; the mass application of modern science and technology and energy; the industrialization, diversification, and specialization of economic activities; the mechanization, electrification, and automation of production model; the rising ratio of industry and service; the falling ratio of agriculture; the formation and development of national market; the sustained growth of economy and productivity; the improvement of economic welfare and social equity; and the transfer of economic center. The key indicator for a country to complete classic economic modernization is the completion of industrialization and for its labor productivity to reach the world's advanced level in the 1960s
Drive force	The impetus of classic economic modernization comprises knowledge growth, capital accumulation, division of labor, international trade, population growth, political and cultural roles, etc.
Model	Classic economic modernization has diverse models, which are path dependent and are subject to the influence of historical, geographic, and objective conditions

Note: Developed countries completed industrialization in the 1960s and entered postindustrialization in the 1970s. Accordingly, the level of developed countries in the 1960s is taken as the then world's advanced level and as a standard to measure whether a country has completed classic economic modernization

Source: RGCMS (2005)

(2) Theories of Economic Growth Stages

In his *The Stages of Economic Growth* published in 1960, American economist Rostow divided economic growth into five stages (Rostow 1960). In his *Politics and the Stages of Growth* published in 1971, he added the sixth stage. Of all these stages, the second, third, fourth, and fifth stages belong to the process of classic economic modernization.

The first stage: traditional society. It was based on the science and technology and the material outlook before the Newton Age. Due to the constraint of productivity, traditional society used most resources for agricultural production and gave birth to a stratified social structure from this agricultural system.

The second stage: pretakeoff conditions. This stage, existing in all societies in transition, was first developed in western Europe at the end of the seventeenth

century and the beginning of the eighteenth century, when modern scientific knowledge began to become a new production function in agriculture and industry.

The third stage: the takeoff stage. It was a stage during which the barriers and resistances to steady growth were eventually overcome. The forces promoting economic progress expanded and began to control the whole society. Growth became normality. During the takeoff stage, the ratio of effective investment rate and the savings rate to national income rose to over 10%. New industries developed rapidly and invested most of their profits in new factories. The class of new entrepreneurs expanded, agriculture became commercialized, and the revolutionary change in agricultural productivity became an indispensable condition for successful takeoff. After one or two decades, both the basic economic structure and the social and political structures underwent changes.

The fourth stage: moving toward maturity. The takeoff was followed by long and sustained growth (even with fluctuations). A society took about 60 years to go from takeoff to maturity. This was as long as two generations, but not an accurate length. With technological advance, accelerated development of new industries and the withering of old industries, economic structure continued to change, and national economy began to find a place in international economy.

The fifth stage: mass consumption. During this stage, the leading sector switched to consumer durables and services. When per capita real income rose to a high level, most people could acquire consumption beyond basic food, housing, and clothing. The labor structure underwent changes, urbanization was realized, and society began to use more resources for social welfare and social security. The emergence of welfare countries was an expression that society had surpassed technological maturity. Cheap mass automobiles produced revolutionary impacts on the people's life.

The sixth stage: pursuing life quality. The leading sector switched from consumer durables to services, especially to the service sectors that were closely related to the improvement of the quality of the people's life, such as education, health, culture, entertainment, and tourism.

Rostow's theory of economic development stages is the most representative one, although some other economic development theories and modernization theories also covered the stages of economic development. While different stages were classified, the stages of development were an objective reality.

(3) Theories of Industrialization

Industrialization is a core process of economic modernization. There has been no unified definition of industrialization (Table 6.10). In general, industrialization in the narrow sense refers to the continuous rise of the ratio of industry in the structures of national income and employment, while industrialization in the broad sense refers to a comprehensive industrialization of the national economy, including the continuous rise of the ratio of industries to the structures of national income and employment, the continuous fall of the ratio of agriculture, and the penetration of the mode and concept of industrial production into all economic

Table 6.10 Contents of industrialization

No.	Definition	Author
1.	Industrialization refers to the process of continuous changes of a host of strategic production functions in the national economy	P. Zhang
2.	Industrialization refers to a structural change from agriculture, namely, a fall of the share of agriculture in national income and employment and a rise of the share of manufacturing and service industries	G. Sak
3.	Industrialization refers to the process of continuous rise of the share of industry in national income and working population	Popular view
4.	Industrialization refers to the process of the growth of the share of manufacturing output value	H. Chenery
5.	Industrialization is a long process of economic restructuring. In this process, the industrial sector continued to expand, and in particular, the manufacturing industry grew rapidly, which led to a continuous fall in the ratio of the agricultural sector in net output value and labor force, a continuous rise in the ratio of the industrial sector and especially the manufacturing sector, and not much change in the ratio of the service sector. In the end, the industrial sector gradually got the upper hand in the national economy, and this meant the realization of industrialization of a country's economy	C. Tan, X. Guo

Note: It is based on the ideas of Tan (2001)

sectors. There have been large amounts of academic documents discussing the types and models of industrialization.

(4) Dual Sector Model

In the 1950s, Lewis introduced the dual sector model (Lewis 1955). He hypothesized that the economic of a developing country consisted of two sectors. One sector was the traditional agricultural sector, which had large numbers of rural people, could maintain a basic living, and had zero marginal labor productivity. The other was the modern industrial sector in urban areas, which had very high labor productivity and could absorb surplus rural labor. Wage gap existed between the agricultural and industrial sectors, and economic mechanisms could attract agricultural labor to the industrial sector. As the ratio between rural labor and land fell, the marginal labor productivity and wage of rural labor would rise. As the transfer of economic activities from traditional agriculture to modern industry would reach certain equilibrium, economic restructuring would complete (Lewis 1955).

6.1.2.2 Economic Modernization Theory in Broad Sense

The economic modernization theory in the broad sense is a theoretical interpretation of the phenomenon of economic modernization in the eighteenth to twenty-first centuries. Being an application of the second modernization theory in the economic sphere, it was introduced by Chinese scholar Chuanqi He. The economic modernization theory in the broad sense generally comprises general theories, branch theories, and related theories (Table 6.11). The general theories discussed here (Table 6.12) have five contents: the definition, process, result, dynamics, and model of economic modernization. Currently, there has been very limited cognition of

Table 6.11 Structure of economic modernization theory in broad sense

Category	Theory	Main contents
General theory	Core theory	Definition, process, result, dynamics, and model of economic modernization
Branch theories	Stage theory	First, second, or integrated economic modernization
	Stratified study	Modernization of world, national, and regional economies
	Subsphere study	Modernization of economic supply, circulation, distribution, demand, and environment
Related theories	Sector theory	Modernization of agricultural, industrial, service, information, financial and trade sectors, etc.
	Other modernization theories	Classic modernization theory, classic economic modernization theory, second modernization theory, etc.
	Related economic theories	Industrialization theory, economic development theory, evolutionary economics, technological economics, industrial economy, knowledge economy, etc.

Source: RGCMS (2005)

second economic modernization and integrated economic modernization. The economic modernization theory in the broad sense is expected to have more research and development.

(1) Definition

Economic modernization is a form of expression for modernization in the economic sphere.

The intension: economic modernization is a sort of frontier change and international competition in the economic sphere since the industrial revolution in the eighteenth century. It comprises the formation, development, transformation, and international interaction of modern economy; the innovation, selection, diffusion, and withdrawal of economic factors; and the international competition, differentiation, and stratification of catching up, reaching, and maintaining the advanced level of the world economy.

The extension: economic modernization comprises the modernization of world, national, and regional economies; the modernization of economic behavior, structure, institution, and ideas; the modernization of economic supply, circulation, distribution, demand, and economic environment; and the modernization of agricultural and other economic sectors and the change of the temporal–spatial distribution of economic modernization.

In general, economic modernization refers to the world frontiers of economic change and the process and action to reach these frontiers, and includes the transition from agricultural to industry economy and the transition from industrial to knowledge economy, the continuous growth of economic efficiency and income per capita, and the change of economic welfare and equity, national economic status, and international economy system. Country is the basic unit for the research and practice of economic modernization, the world is the international arena for them, and regional economic modernization is a component of the modernization of

Table 6.12 General theory of economic modernization in broad sense

Aspect	Basic content
Definition	Economic modernization means the modernization of the economic sphere. It is also a form of economic change and international competition since the industrial revolution in the eighteenth century; a frontier process of the formation, development, transformation, and international interaction of modern economy; a compound process of the innovation, choice, diffusion, and withdrawal of economic factors; and a form of international competition and international differentiation to catch up, reach, and maintain the world's advanced level of the economic development
Process	Economic modernization is a complex process, comprising economic development, transformation, international economic competition, differentiation and national economic stratification, the changes of economic behavior, structure, institution, and ideas, and the world frontiers of economic change and the process of reaching the world frontier. During the eighteenth to twenty-first centuries, the frontier track of economic modernization process could be divided into two major stages. Specifically, first economic modernization was a transition and profound change from agricultural to industrial economy and from self-supporting to market economy, whose main features included industrialization, marketization, deagriculturalization, etc. Second economic modernization was a transition and profound change from industrial to knowledge economy and from material to ecological economy. Currently, its main features include intellectualization, greenization, de-industrialization, etc. The coordinated development of the two economic modernizations constitutes integrated economic modernization. Economic modernization in the twenty-second century will comprise new changes. It observes the ten basic principles governing modernization (Table 2.15)
Result	Formation of economic modernity, particularity, diversity, and side effects. They include the growth of economic efficiency and per capita income, the improvement of economic welfare and economic equity, and the change in national economic level, status, and international economic system. The results of first economic modernization were the formation of first economic modernity, particularity, and diversity, the side effects such as environmental pollution and cyclic economic crises, and so on. The main marks for the completion of first economic modernization were the finish of industrialization and marketization and the reaching of economic efficiency and per capita income to the advanced level of industrial economy (the average level of industrial countries in the 1960s). The results of second economic modernization were the formation of second economic modernity, particularity, and diversity and the side effects such as network crimes and international risks. The main marks for the completion of second economic modernization were the completion of intellectualization and ecologization, and the reaching of labor productivity and per capita national income to the advanced level of knowledge economy (sometime in the future). The basic standards for the realization of economic modernization include the reaching of economic effectiveness, per capita income, economic structure, and economic system to the world's advanced level at the time
Dynamics	The factors driving economic modernization include innovation, exchange, competition, adaptation, national interests, and market demand; include economic growth, demand change, globalization, and reasonable expectation; and include the growth of knowledge capital, social capital, material capital, human capital, ecological awareness, and knowledge consumption, the change of economic structure and the entrepreneurship. The impetus models include innovation driving, three-innovation driving, two-wheel driving, four-step supercycle, associative action, innovation dissemination, innovation spillover, competition driving, and productivity function (Table 2.20). Different countries have somewhat different impetuses for economic modernization in different stages

(continued)

Table 6.12 (continued)

Aspect	Basic content
Model	Economic modernization has diverse paths and models, is path dependent, and is subject to the influence of historical, geographic, and objective conditions. It has three basic paths in the twenty-first century: the path of first economic modernization, the path of second economic modernization, and the path of integrated economic modernization. The corresponding basic models are the model of industrialization, the model of paralleled intellectualization and informatization, the model of information economy, the model of ecological economy, the model of biological economy, the model of experience economy, the model of paralleled industrialization and informatization, the model of new industrialization, the model of green industrialization, etc.

Note: There has been no unified definition of modern economy. In general, modern economy comprises industrial economy (preliminary modern economy) and knowledge economy (advanced modern economy). Preliminary modern economy pursues the maximization of material interests, while advanced modern economy pursues both economic and environmental efficiencies

Source: RGCMS (2005, 2010)

Table 6.13 Conceptual models of economic modernization

Item	Content
Hypothesis 1	Economic growth refers to the expansion of economic aggregate and economic scale
Hypothesis 2	Economic progress refers to the improvement of economic quality, efficiency, and equity
Hypothesis 3	Economic transformation refers to the change and replacement between new and old economic forms (including two economic transitions)
Hypothesis 4	Change of international economic status refers to the change of the international status of national economy in world economy
Inference 1	$\text{Economic development} = \text{economic growth} + \text{economic progress} + \text{economic growth} \times \text{economic progress}$
Inference 2	$\text{Economic modernization} = \text{economic development} \times \text{economic transition} \times \text{change of international economic competition and international economic status}$

Source: RGCMS (2005)

national economy and is subject to the constraint of the modernization of national economy.

Economic modernization is a change in the economic sphere. Apparently, not all economic changes belong to economic modernization. In general, only the economic changes that help improve productivity, social progress, and human development belong to economic modernization.

In general, economic development comprises economic growth and economic progress, and economic modernization is a collection of economic development, economic transformation, international economic competition, and international status change (Table 6.13). The change of international economic status has four scenarios: maintaining the advanced level of the world economy, narrowing the gap with the advanced level of the world economy, keeping the same gap with the

advanced level of the world economy, and widening the gap with the advanced level of the world economy.

(2) Process

Economic modernization is a long and complex global process, which includes the change of production model, core technology, leading industry, economic behavior, structure, system, concept, etc. The process of economic modernization can be divided into two types: frontier process and catch-up process with both common and different features. During the eighteenth to twenty-first centuries, its frontier process experiences two stages: first and second economic modernizations (Table 6.14). First economic modernization comprises three waves, and second economic modernization comprises three waves (Table 6.2). The two economic modernizations have different contents and features (Table 6.15).

First economic modernization refers to the transitions and profound changes from agricultural to industrial economy and from self-supporting to market economy. It comprises the transitions from small-scale agricultural to commodity economy, from land to capital economy, from natural to technological economy, from scattered to central economy, and from regional to national economy. Its unique features include industrialization, mechanization, electrification, automation, specialization, standardization, centralization, scale operation, marketization, deagriculturalization, etc.

Second economic modernization is the transitions and profound changes from industrial to knowledge economy and from material to ecological economy. It comprises the transitions from product to service economy, from capital to information economy, from real to virtual economy, from scale to innovation economy, from efficiency to effectiveness economy, from national to global economy, etc. Currently, its unique features include intellectualization, informatization, servicization, intelligentization, decentralization, ecologization, greenization, dematerialization, globalization, de-industrialization, etc.

If first economic modernization is a preliminary economic modernization and a transition from traditional to primary modern economy, second economic modernization is an advanced economic modernization and a transition from primary modern to hypermodern economy. The coordinated development of the two economic modernizations is an integrated economic modernization.

The process of economic modernization has 12 unique features: it is revolutionary, long, complex, uneven, partial reversible, dynamic, global, progressive, risky, not completely spontaneous, economic efficiency popularization, and economic structure convergence.

Economic modernization is a sort of modernization and follows the ten basic principles (Table 2.15).

(3) Result

The outcome of economic modernization comprises the formation of economic modernity, particularity, diversity, and side effects. The result of economic

Table 6.14 Periodic table of economic modernization in broad sense—change of economic form

Stage (approx. starting year)	Features of economic form and structure	Economic modernization
<i>Age of knowledge economy</i>	<i>Knowledge, global, and ecological economy</i>	
Transition stage (2050)	Mature knowledge economy: knowledge industry and material and service industries	<i>Second economic modernization</i> Knowledge economic revolution
Mature stage (2020)	Mixed knowledge economy: ratio of knowledge economy surpassing that of material industries	Intellectualization and de-industrialization
Developing stage (1992)	Mixed knowledge economy: ratio of knowledge economy surpassing that of industry	
Start stage (1970)	Starting of knowledge economy and falling ratio of industry	
<i>Age of industrial economy</i>	<i>Industrial, market, and material economy</i>	
Transition stage (1946)	Mature industry economy: industry, service, and agriculture	<i>First economic modernization</i> Industrial economic revolution
Mature stage (1914)	Mixed industrial economy: ratio of industry surpassing that of agriculture	Industrialization and deagriculturalization
Developing stage (1870)	Mixed industrial economy: ratio of industry lagging that of agriculture	
Start stage (1763)	Initiation of modern industrial economy and falling that of agriculture	
<i>Age of agricultural economy</i>	<i>Agricultural, self-supporting, and material economy</i>	
Transition stage (AD 1500)	Mature agricultural economy: small-scale agricultural economy and handicraft industry	(Agricultural economic revolution) (Agriculturalization and hunting reduction)
Mature stage (AD 618)	Mixed agricultural economy: ratio of planting and animal husbandry surpassing that of hunting and gathering	
Developing stage (500 BC)	Mixed agricultural economy: ratio of planting and animal husbandry equaling that of hunting and gathering	
Start stage (3500 BC)	Starting of agricultural economy and falling of hunting and gathering	
<i>Age of primitive economy</i>	<i>Primitive, simple, and natural economy</i>	
Transition stage (10,000 years ago)	Primitive economy, and invention of planting and breeding	(Primitive agricultural revolution, and slash-and-burn farming)

(continued)

Table 6.14 (continued)

Stage (approx. starting year)	Features of economic form and structure	Economic modernization
Mature stage (40,000 years ago)	Hunting and gathering, and division of labor	
Developing stage (200,000 years ago)	Hunting and gathering	
Start stage (2,500,000 years ago)	Hunting and gathering	

Note: The time of chronology and the features were based on the frontier track of the development of world economy

Source: RGCMS (2005)

Table 6.15 Two stages of economic modernization in broad sense

Item	First economic modernization	Second economic modernization
Time	Roughly 1763–1970	Approx. 1970–2100
Content	Transition from agricultural to industrial economy	Transition from industrial to knowledge economy and from material to ecological economy
Feature	Industrialization, marketization, standardization, and deagriculturalization	Intellectualization, greenization, globalization, de-industrialization, and dematerialization
Concept	Economic growth, economic efficiency, and materialism	Economic quality, ecological awareness, and win–win of economy and environment
Technology	Mechanization, electrification, and automation	Informatization, digitization, intelligentization, intellectualization, and greenization
Production	Industrialized mass production, with industry being leading industry	Intellectualized, greenized, and globalized production, with knowledge industry being leading industry
Circulation	Marketization, commercialization, and monetization	Networking, internationalization, securitization, FTA, e-business
Dynamics	Technology, capital, population, and international competition	Knowledge, information, innovation, ecological awareness, and international competition
Objective	Production of material products to meet demand of material life	Production of material and intellectual products to meet demand of material and spiritual life
Modernity	First economic modernity: industrial, market, material, capital, and national economy	Second economic modernity: knowledge, information, ecological, cultural, biological, service, and global economy
Side effect	Environmental pollution and cyclic economic crises	Network economic crimes and international economic risks

Source: RGCMS (2005)

modernization in different countries has commonality and difference. And the results of the two economic modernizations are different (Table 6.15).

On the level of world economy, the result of economic modernization is manifested in six areas: the completion of twice economic revolutions and twice

economic transitions; the growth of economic efficiency and per capita income; the improvement of economic welfare and equity; the widening of the gap in international economic efficiency and the narrowing of the gap in economic structure; the shift of the world economic center; and the change of the international economic system. The first three are applicable to the modernization of national and regional economies, and the latter also involves change in international economic status.

In the course of economic modernization, some countries reach and maintain the advanced level of the world economy and become advanced countries while others are developing countries. The two types of countries can change their places between them. In general, about 20% are advanced countries, and about 80% are developing countries. In a time span of 50 years, about 10% advanced country may degrade into developing countries, and about 5% developing countries may upgrade into advanced countries. The two types of countries are in a state of dynamic equilibrium.

The objectives of national economic modernization include completing first economic modernization, completing the second economic modernization, catching up, reaching, and maintaining the advanced level of the world economy, and becoming an advanced country or narrowing the international economic gap.

Since the 1950s, the result of economic modernization has been in correlation with its objective, and this correlation has been gradually formed and strengthened with the growth of modernization study.

(4) Dynamics

The drive force of economic modernization should be analyzed from two perspectives: impetus factors and impetus mechanisms (Table 6.12). In general, economic modernization has somewhat different drive force on different levels, in different countries, and during different stages. The dynamic models of the general modernization theories are basically applicable to economic modernization (Table 2.20).

(5) Model

In the twenty-first century, economic modernization has roughly three basic paths (Fig. 6.7) in the term of theory. The path of first economic modernization corresponds to the model of industrialization; the path of second economic modernization corresponds to the model of information economy, ecological economy, biological economy, and experience economy; and the path of integrated economic modernization corresponds to the model of new industrialization, including the coordinated development of industrialization, de-industrialization, intellectualization, informatization, and ecologization. Different models have many submodels.

In general, the process, result, dynamics, and model of economic modernization can be analyzed from the world, national, and regional perspectives, and the analysis from different perspectives can have somewhat different contents and unique features.

The *China Modernization Report 2005* introduced the economic timetable, periodical table, coordinates, and paths for economic modernization in the broad sense, and the conceptual model, quantitative model, objective model, and

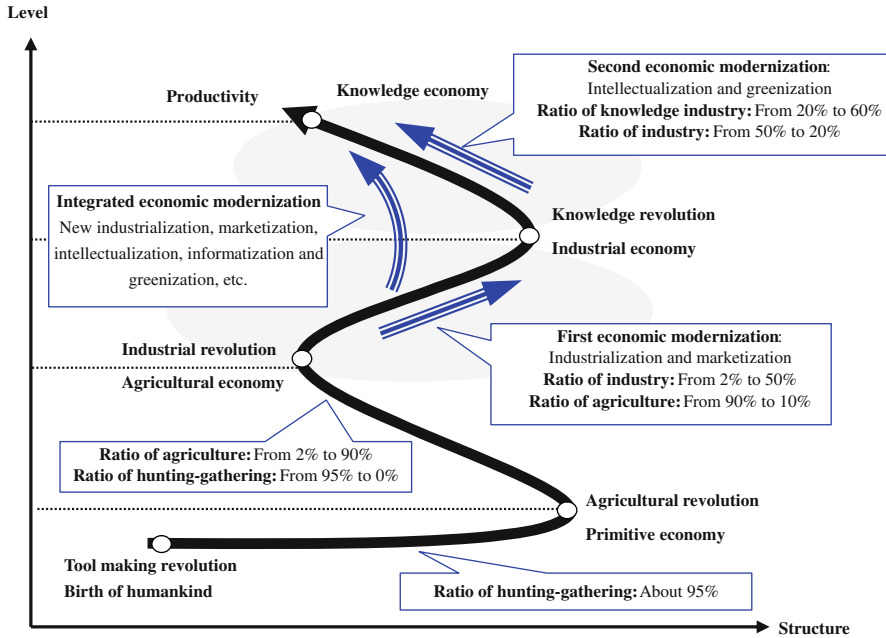


Fig. 6.7 Three paths for economic modernization in twenty-first century. Note: the horizontal coordinate represents the output structure of productivity. The structural graduation is the output ratio between agriculture and hunting-gathering (estimated) in the age of primitive economy, the output ratio between hunting-gathering and agriculture in the age of agricultural economy, the output ratio between industry and agriculture in the age of industrial economy, and the output ratio between industry and agriculture and knowledge industry in the age of knowledge economy. Source: RGCMS (2005)

dynamics model of economic modernization. It also discussed the stage theories of the economic modernization theory in the broad sense, and the methods for the modernization of the national economy.

(6) Second Economic Modernization

Second economic modernization is a form of expression for economic modernization and represents a frontier change occurring in the economic sphere since the 1970s. It comprises the transitions from industrial to knowledge economy and from material to ecological economy; the growth of economic efficiency and per capita income; the improvement of economic quality, welfare, and equity; the international economic differentiation; and the change of the international economic system.

Second economic modernization is a complex historical process, which includes economic development, economic transformation, international economic competition, and the change of national economic status and also includes the intellectualization and greenization of production model, core technology, leading industry, basic structure, basic system, and basic concept. In relation to industrial economy, knowledge economy is a new economic form and has many new features (Table 6.16).

Table 6.16 Main features of knowledge economy

Item	Main features
Production factor	Core production factors: knowledge (information), intangible assets, and intellectual workers
Production model	Informatization, networking, real-time production, clean production, agile production, smart and intelligent production
Corporation	Network structure, partnership, flexibility, innovativeness, environment-friendliness, and knowledge production
Management	Informatization, networking, personalization, elastic management, knowledge management, innovative management, cultural management, and strategy management
Technology	Digitization, intelligentization, intellectualization, greenization, visualization, and elastic manufacturing
Product	Intelligent, specialized, personalized, artistic, green, dematerialization, and short market cycle
Market	Globalized, no national boundary, fast changing, green, networking, and e-business
Industry	Three new major industries: knowledge industry plays leading roles and material industries (industry and agriculture) and traditional service industry play secondary roles
Distribution	Distribution according to contribution and regulation according to demand, with knowledge capital and investment capital participating in net income distribution
Employment	High employment rate for mental workers, high unemployment rate for physical workers, and wide unemployment insurance coverage
Corporate culture	Innovation, cooperation, learning, ecological awareness, and emphasis on knowledge capital and investment capital
Growth dynamics	Production and application of knowledge and information, innovation, knowledge workers, and environmental awareness

Source: He (1999)

(7) Integrated Economic Modernization

Integrated economic modernization is a basic path for economic modernization in the twenty-first century. It comprises the chain reaction between twice economic transitions (from agricultural to industry economy and from industrial to knowledge economy) and the continuous movement toward knowledge economy; comprises the coordinated development of the industrialization, deindustrialization, intellectualization, informatization, greenization, and globalization of national economy and the continuous movement toward intellectualization and greenization; and comprises the growth of economic efficiency and per capita income, the improvement economic quality, welfare, and equity, the international economic competition, and the change of international economic status (RGCMS 2005).

Integrated economic modernization is a historical process, which features the coordinated development of twice economic modernizations and the continuous transition to second economic modernization (Fig. 6.8). It comprises the change of

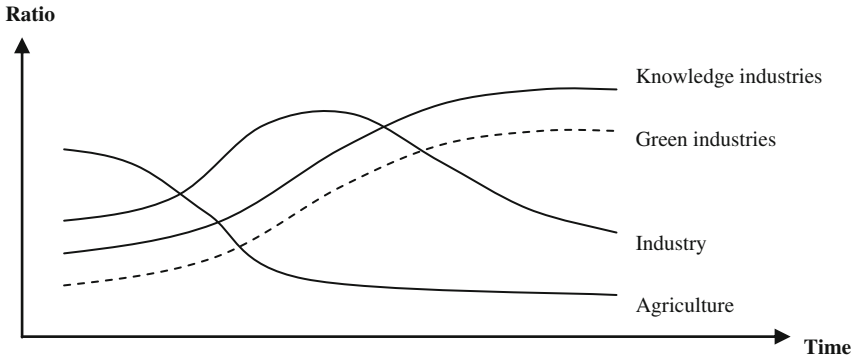


Fig. 6.8 Industrial structure of integrated economic modernization. Note: green industry refers to the industry that is unharmed to human beings and nature and is friendly to ecology and environment. Source: RGCMS (2005)

production model, core technology, leading industry, economic structure, system, and concept, and the international competition to catch up and reach the advanced level of the world economy. Integrated economic modernization comprises three equally important stages: new industrialization and informatization, deindustrialization and intellectualization, and intellectualization and greenization. Its objective is to catch up and reach the world's advanced level of economic modernization. The mark for the realization of integrated economic modernization is for economic efficiency, welfare, and system to reach the world's advanced levels at the time.

6.2 Social Modernization

Social modernization means the modernization of the social sphere and is a form of expression of the modernization phenomenon in social field. It comprises staged and stratified social modernization, the modernization of social subspheres and sectors (Fig. 6.9). In the documentation on classic modernization, social modernization and modernization often are not clearly distinguished, and sometimes they are regarded as being synonymous.

6.2.1 Studies

The social modernization study, a component of the modernization study, refers to the modernization study of the social sphere. This study, which dates back to the early years of the eighteenth century, can be analyzed from three perspectives: historical process, objective reality, and future prospect.

There is no unified definition of society and social sphere. In general, society refers to human community that shares a common culture and territory and interacts

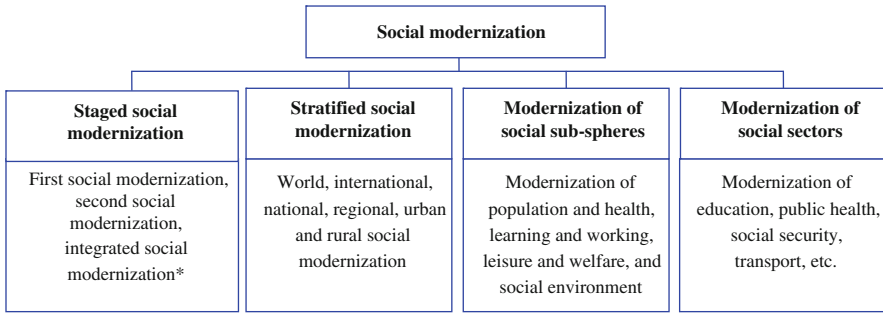


Fig. 6.9 Objects of social modernization study. Note: (*Asterisk*) Integrated social modernization means the coordinated development of twice social modernizations and is a basic path for social modernization in developing countries

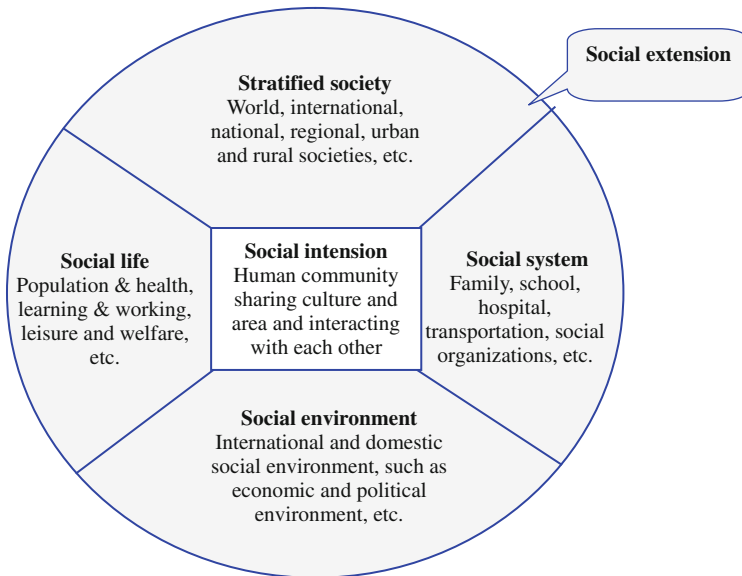


Fig. 6.10 Operational definitions of social intension and extension

with each other. Its extension includes stratified society, social life, social system, and social environment (Fig. 6.10). Social sphere refers to a sphere of human civilization and a sphere related to social behavior, structure, system, and change. Social modernization is a short term for the modernization of social sphere.

6.2.1.1 Research Paradigm

The objects of social modernization study are the modernization of social sphere, covering the modernization of population and health, learning and working, leisure and welfare, and social environment, as well as the world, national, and regional

Table 6.17 Matrix of social modernization study

Content		Object		
		Social sphere	Population and health, learning and working, leisure and welfare, and social environment	World, national, regional, urban, and rural societies
		Social modernization	Modernization of four social subspheres	Social modernization on five levels
Element	Behavior	Modernization of social behavior, structure, institution, and ideas	Modernization of social behavior, structure, institution, and ideas in the four social subspheres	Modernization of social behavior, structure, institution, and ideas on the five levels
	Structure			
	Institution			
	Idea			
Aspect	Process	Process, result, dynamics, and model of the social modernization	Process, result, dynamics, and model of social modernization in the four social subspheres	Process, result, dynamics, and model of social modernization on the five levels
	Result			
	Dynamics			
	Model			

Note: Population and health cover population, family, residence, medical care and health, etc. Learning and working cover education, employment, income, poverty, etc. Leisure and welfare cover leisure, entertainment, transportation, communication, social security, public security, etc. Social environment covers domestic social environment (political, economic, cultural, and cultural environment) and international social environment. The contents of social modernization study also cover staged social modernization, modernization of social sectors, analysis of social frontier, analysis of social trend, analysis of social frontier process, analysis of social catch-up process, and interaction between social modernization factors and different spheres. The social modernizations of urban and rural are two subregional social modernizations

Source: RGCMS (2006)

social modernization. The research contents include the modernization of social behavior, structure, system, and ideas and the process, result, dynamics, and model of social modernization. They can form a structural matrix (Table 6.17). The objects of social modernization study also include staged social modernization, the modernization of social sectors, etc.

Social modernization study is a branch of modernization study and can use the methodology of modernization study. It has diverse analytic methods, such as time-series analysis, cross-sectional analysis, process analysis, case analysis, social investigation, quantitative evaluation, and coordinates analysis. The research time span can be a whole process or a time period. The research scope can be the world, a country, or a region. The research objective includes academic and policy objectives. Different types of research have different features.

6.2.1.2 Historical Facts

Social modernization, which began in the middle of the eighteenth century, is a form of social change. In general, social modernization is closely linked with economic modernization. Social modernization surges when economic modernization surges (Table 6.18), but they were asynchronous. In relation to the six waves of economic modernization, the division of the six waves of social modernization is

Table 6.18 Two major stages and six waves of social modernization

Wave	Approx. time	Content	Annotation
First	1763–1870	Urbanization, mechanization, urban health, social relief, and primary education development	<i>First social modernization</i> Urbanization, social welfare, mobility, and compulsory education
Second	1870–1945	Urbanization, electrification, public health, social insurance, and universal compulsory education	
Third	1946–1970	Social welfare, automation, technologization, automobile popularization, and universal secondary education	
Fourth	1970–2020	Intellectualization, networking, greening, suburbanization, globalization, and universal higher education	<i>Second social modernization</i> Intellectualization, suburbanization, greening, and higher education
Fifth	2020–2050	Biological economy, urban–rural balance, barrier-free knowledge and information acquisition, leisure popularization, and intelligent transport	
Sixth	2050–2100	Experience economy, life engineering, leisure-working integration, and super-transport experience	

Note: The fifth and sixth waves are merely forecasts. Some scholars believe that developed countries enter “deurbanization” after completing urbanization, which includes migration of urban population to suburbs and townships before an urban–rural balance is reached. This migration is called suburbanization here

Source: RGCMS (2006)

not quite clear. The *China Modernization Report 2006: Social Modernization Study* (RGCMS 2006) systematically analyzed the process, facts, and enlightenments of social modernization as follows.

(1) Process Analysis

First, the first wave of social modernization. Corresponding to the first industrial revolution, this wave experienced a long process of preparation and mainly occurred in European countries. The essence was industrialization-induced urbanization, mechanization, rationalization, social differentiation, social mobility, development of primary education, establishment of public health and relief establishment, and the improvement of social productivity and living standards.

Second, the second wave of social modernization. It comprises two parts: the social change during the second industrial revolution and that during the two World Wars. Over the 60 years, the wave of social modernization spread to the vast areas of Europe, America, and Asia. The features were urbanization, electrification, mechanization, specialization, social mobility, social movement, social differentiation, social transition and integration, universal primary education, development of public health, establishment of social insurance system, formation of urban society, and improvement of living standard and social productivity. During the two World

Wars, the features were universal primary education, social movement, social differentiation, mechanization and electrification of family, improvement of living standards, and development of social security system.

Third, the third wave of social modernization. It comprises social modernization in industrial countries and that in developing countries. The former represented the core and frontier of the third wave of social modernization, while the latter represented the first wave of social modernization in developing countries. The main contents include urbanization, suburbanization, social welfare, social differentiation and integration, bureaucratization, technologization, automation, mass communication, establishment of welfare state, universal secondary education, and development of higher education.

Fourth, the fourth wave of social modernization. It was driven by knowledge and information revolutions. While industrial revolution led to a higher ratio of industrial labor force and a lower ratio of agricultural labor force, knowledge revolution led to a lower ratio of industrial labor force and a higher ratio of intellectual labor force (Knowledge labor force). Like the first wave, the fourth wave is a social revolution in nature. The fourth wave also has a process of preparation, and this process is not yet completed. So far, the main contents of the fourth wave include informatization, networking, intellectualization, innovatization, suburbanization, urban–rural balance, internationalization, greening, diversification, universal higher education, and lifetime learning.

Fifth, the fifth wave of social modernization. This wave is a forecast, featuring the new biological effects and formation of biological economy and society. The development of new biological revolution and high technologies will lead to the integration of biological technology, information technology, and nanotechnology and the formation of life-engineering technology that will transform and manipulate life functions. The life of organisms will become controllable, the biological economy will become the leading industry, and social concept will undergo revolutionary changes. The information converter will realize information conversion between human brains and computers, and barrier-free acquisition of knowledge and information will become a social reality.

Sixth, the sixth wave of social modernization. This is also a forecast, featuring the new physical effects and the formation of cultural economy and society. On the basis of new physical revolution and in conjunction with the development of high technologies and new energies, both manufacturing and transport technologies and temporal–spatial concepts will undergo revolutionary changes. Super-manufacturing systems will replace most of human physical and mental work, super-transport systems will make it possible for human beings to go where they want, and cultural life and sentimental experience will become the dominant form of social economy.

(2) Modernization of Three Subsocial Spheres

The social sphere comprises some subspheres or branch spheres, and different subspheres have different contents and features (Table 6.19).

Table 6.19 Modernization of three subsocial spheres

Approx. time	Sphere of population and health	Sphere of learning and working	Sphere of leisure and welfare
1763–1870	Social mobility, differentiation, urbanization, and urban health	Primary education development, 10-h working system, and lower ratio of agricultural labor force	Railway, shipping, highway, telegraph, and social relief
1870–1945	Accelerated urbanization, lower ratio of birth, mortality, fertility and marriage, expanded public health and middle class	Universal primary education, 8-h working system, lower ratio of agricultural labor force, strike movement	Social insurance, social security system, electrification, mechanization, automobile, telephone
1946–1970	Urbanization, suburbanization, higher divorce rate, small family, public health	Universal secondary education, 40-h working system, lower ratio of agricultural labor force	Welfare state, technologization, automation, expressway, air transport
1970–2020	Suburbanization, aging, family diversification, public health	Universal higher education, flexible working system, lower ratio of industrial labor force	Welfare reform, diversification, greening, globalization, informatization, cyberspace
2020–2050	Urban–rural dynamic balance, birth diversification, life engineering	Information conversion, barrier-free knowledge acquisition, higher ratio of intellectual jobs	Leisurization, entertainment diversification, intelligent transport
2050–2100	Dynamic balance of population spatial structure, birth diversification, life engineering	Cultural experience, flexible working system, higher ratio of intellectual jobs	Leisure–work integration, super-transport

Source: RGCMS (2006)

(3) Social Modernization and Change of Social Systems

The change of social system is an important component of social modernization. In general, the basic social system is a system that governs the ownership, allocation, and distribution of social resources. In the age of primitive society, the basic social system was primitive public ownership. Social resources were publicly owned and were distributed equally or according to needs. Private ownership came into being in the transitional period of the age of primitive society, but the social system still carried the color of public ownership. In the age of agricultural society, the basic social system is agrarian ownership, including slavery, manorialism, nomadism or tenancy, etc. Social resources were privately owned, and the kings, bureaucrats, and slave owners (manor or land owners) determined the allocation and distribution of social resources. In the age of industrial society, the basic social system was market economy and social welfare system. The state and the market determined the allocation and distribution of social sources. In the age of knowledge society, the

Table 6.20 Typical features of basic social systems in social history (examples)

Social time	Age of primitive society	Age of agricultural society	Age of industrial society	Age of knowledge society
Historical time	Birth of mankind ~3500 BC	3500 BC–AD 1763	1763–1970	1970 to approx. 2100
Social form	Primitive society	Agricultural society	Industrial society	Knowledge society
Basic system	Primitive public ownership	Agrarian system	Social welfare system	Information and knowledge system
Population	Natural birth	Encouraged birth	Controlled birth	Independently selected birth
Family	Matrilineal and patrilineal families	Big family, moral marriage	Small family, legal marriage	Family and marriage diversification
Education	Teaching by precept and example	Nonstandard education	Universal primary education	Universal higher education
Working	Male hunting and female gathering	Family-based natural working system	Industrialized standard working system	Diverse and flexible working systems
Distribution	Equal distribution	Distribution according to power and land ownership	Distribution according to capital or labor	Distribution according to contribution and regulation according to demand
Security	Clan self-security	Family self-security	Social security and welfare	Social security and welfare

Source: RGCMS (2006)

basic social system will be information networking and knowledge system, and the systems on the production, allocation, and distribution of knowledge resources are still in the process of formation (Table 6.20). From the perspective of social system change, the transition from agricultural social system to industrial social system constitutes first social modernization, and the transition from industrial social system to knowledge social system represents second social modernization.

The formation of a new social system is a historical process. From preparation, introduction, development, maturity, and elimination, each stage has its own features. Accordingly, there must be an intermediate form of social systems between one basic social system and another system. They can be called transitional social systems or subsocial systems. In the age of primitive society, the subsocial systems included the systems of matrilineal, tribal, fishing, horticultural, and pastoral society. In the age of agricultural society, the subsocial systems included systems of hunter–gatherer, pastoral, horticultural, feudal society, etc. In the age of industrial society, the subsocial systems included systems of various primitive and agricultural societies. In the age of knowledge society, the subsocial systems included systems of agricultural, industrial, information, virtual and service society, etc.

Table 6.21 Basic social forms and their typical features in social history

Type of society	Primitive society	Agricultural society	Industrial society	Knowledge society
Historical time	Birth of mankind ~3500 BC	3500 BC–AD 1763	1763–1970	1970 to approx. 2100
Production mode	Collective hunting and gathering	Agricultural manual production	Industrialized mass production	Intellectualized global production
Production technology	High-efficient hunting technology	Food production technology	Material production technology	Production and application of knowledge and information
Social life	Hunting, gathering, and migration	Farming and nomadic life	Urbanization and electrification	Networking, suburbanization and globalization
Social structure	Over 95% for hunting and gathering	Over 90% for agriculture and animal husbandry	Over 50% for industrial labor	Over 50% for knowledge labor
Social system	Primitive public ownership	Agrarian system	Social welfare system	Information society system
Social concept	Equal distribution	Distribution according to power and land ownership	Distribution according to capital or labor	Distribution according to contribution and regulation according to need

Source: RGCMS (2006)

(4) Social Modernization and Change of Social Forms

From the birth of mankind to the end of the twenty-first century, human society has had four basic social forms: primitive society, agricultural society, industrial society, and knowledge society. Each social form has its own basic structures, including the structures of population, family, residence, health, education, labor, income, leisure, transport, communications, and social system. Each social form also has its own basic features, including the features of social productivity, life, structure, system, and concept (Table 6.21).

(5) Basic Facts of Social Modernization

First, the facts of the population and health sphere. Since the eighteenth century, life expectancy and healthy life became longer, the rate of population natural growth rose first and fell later, and social mobility and differentiation continued, from urbanization to suburbanization and to urban–rural balance. Since the nineteenth century, the rates of population and infant mortalities fell steadily, population aging became increasingly visible, families became smaller and diversified, and public health and home facilities continued to improve. Since the twentieth century, public health spending and per capita health spending became higher.

Second, the facts of the learning and working sphere. Since the eighteenth century, the structures of labor force and employment continued to change, the social productivity and per capita income became higher, the equity of income

distribution changed, and the equity of income distribution in developed countries fell first and rose later (fluctuations occurred in some countries). Since the nineteenth century, primary education was universalized, labor time became shorter, and the unemployment rate continued to fluctuate. Since the twentieth century, secondary and higher education was universalized, public education spending and per capita education spending rose, and the ratio of population living in absolute poverty became lower.

Third, the facts of the leisure and welfare sphere. Since the eighteenth century, transport continued to develop, and the development of the social security system experienced four stages: social relief, social insurance, social welfare, and welfare reform. Since the nineteenth century, leisure time became longer, and communications technology continued to develop. Since the twentieth century, entertainment and leisure were diversified and networked, the use of computers and Internet became higher, the information spending and per capita information spending became higher, and the spending on social security and welfare went up. In the twentieth century, crimes and suicides became rampant and long fluctuated. At the end of the twentieth century, 170 countries and regions established social security system.

Over the past three centuries, social life, structure, system, and concept continued to change, social change was highly uneven and asynchronous, and the international gap in per capita national income became wider.

(6) Historical Enlightenments of Social Modernization

First, social modernization is both a historical necessity and a social choice. To human civilization, social modernization is a historical necessity, which represents a direction of the advance of human civilization. To different countries and nations, social modernization is a social choice. The countries and nations that have chosen social modernization must bear the responsibility and result of social modernization. Of course, the countries and nations that have failed to choose social modernization must also bear the result of its choice. This result is roughly to stay in traditional agricultural society or primitive society (Table 6.22), and lag increasingly behind the frontier of human civilization.

Second, social modernization advances like waves, instead of a smooth sailing. Social modernization is independent of man's will and observes objective laws. Wave-like advance, one of the important laws, is determined by three factors: the fluctuation of knowledge and technological innovation, the fluctuation of economic performance, and the fluctuation of human idea and cognition (confrontation between innovation and conservativeness).

Third, major progress in social modernization depends on major innovation and its spreading. On the frontier of human civilization, social modernization is more of a natural evolution. But natural development is not a windfall, but a result of innovation and its spreading. In fact, each revolutionary advance in social modernization is a result of major innovation and its spreading.

Fourth, social modernization has three sources. First, it is a partial inheritance and development of traditional society, such as scientific and technological

Table 6.22 Roughly estimated world population distribution 1700–2001

Year	Population (10,000)	Estimated population (10,000)		Estimated population ratio (%)							
		Primitive society	Agricultural society	Industrial society	Knowledge society	Primitive society	Agricultural society	Industrial society	Knowledge society		
1700	60,341	520	59,821	–	–	–	–	0.86	99	–	–
1820	104,109	520	102,152	1,437	–	1,437	–	0.50	98	1	–
1900	156,400	520	138,290	17,590	–	17,590	–	0.33	88	11	–
1960	302,040	520	210,957	90,563	–	90,563	–	0.17	70	30	–
1981	450,660	520	148,264	276,959	25,437	276,959	25,437	0.12	33	61	6
2001	612,770	520	109,026	413,744	90,000	413,744	90,000	0.08	18	68	15

Note: Primitive society refers to the society featuring hunting and gathering, and the 2001 data are used for the hunting and gathering population between 1700 and 2001

Source: RGCMS (2006)

knowledge and social morality. Second, it is a partial negation and conversion of traditional society, such as urbanization and suburbanization. Third, it is an innovation of knowledge and system, such as industrial revolution and knowledge revolution. The three sources have somewhat different importance in different stages of social modernization in different nations.

Fifth, social modernization is not only a social progress but also a social adaptation. Social modernization contains social progress, such as the improvement of life quality, social efficiency, national literacy, social welfare, and social equity. It also contains positive social adaptation, such as the positive changes in lifestyle, living environment, and social environment. Some social adaptations, such as informatization and leisurization, also represent a social progress. But some social adaptations, such as small families and lower birth rates, only reflect some social changes in conformity with social progress.

Sixth, social modernization has a “late-comer effect.” The historical experience over the past three centuries indicates that social modernization can be divided into two types: “early-comer” and “later-comer.” An “early-comer” country enjoys “competitive advantages” because it can lead the world trend, utilize world resources, and set world rules. A “late-comer” country can have “later-comer effect,” because it can draw on and utilize the successful experience and advanced technologies of the “early-comer” countries, reduce miscalculations, and cut down time–cost of the process. But in the competition of the international community, the “later-comer effect” should not be overestimated, because technology attraction is a market behavior and is subject to the influence of many factors. The “late-comer” countries need to enhance their international competitiveness and their ability to differentiate and avoid falling into international traps of “being utilized, manipulated, and misled.”

Seventh, social modernization has no best model, but rational choice and path dependency. Social modernization is same in nature but can have diverse forms. While social modernization can have the same direction, it can have diverse paths. For example, different developed countries in the West have different education systems, social security systems, and public health systems.

Eighth, social modernization is not once-and-for-all endeavor. It is in the relative, and its status is changeable. Social modernization is noted for structural stability and status changeability. The history of the past three centuries indicates that the world structure of social modernization has been basically stable, with about 20% countries being advanced countries and about 80% countries being developing countries in social modernization. The international social status of specific countries can change, and this change observes certain regularity. For example, in the 43 years from 1960 to 2003, about 88% advanced countries and over 90% developing countries saw no change in their international status. While about 12% advanced countries downgraded into developing countries, about 6% developing countries upgraded into advanced countries. Developing countries include moderately developed countries, preliminarily developed countries, and underdeveloped countries.

6.2.1.3 Present State and Prospect of Social Modernization

(1) Present State

First, the level of social modernization. Of the 131 countries in 2003, about 31 countries or 24% of all had completed first social modernization, and 23 countries or 18% of all had entered second social modernization. Classified according to the second social modernization index, 20 countries including Norway were developed countries, 33 countries including Spain were moderately developed countries, 17 countries including Thailand were preliminarily developed countries, and 61 countries including China were underdeveloped countries.

Second, the stage of social modernization. In 2003, eight countries including Norway entered the developing stage of second social modernization, 15 countries including France were in the start stage of second social modernization, 17 countries including Brazil were in the transition stage of first social modernization, 31 countries including Poland were in the mature stage of first social modernization, 28 countries including China were in the developing stage of first social modernization, 13 countries including India were in the start stage of first social modernization, and ten countries including Chad were still in traditional agricultural society (Fig. 6.11).

Third, the world frontier of social modernization. In 2003, the world top ten countries in terms of the second social modernization index were respectively Norway, Sweden, the United States, Denmark, Britain, Finland, Japan, the Netherlands, Switzerland, and Australia.

Fourth, the status change of social modernization. During the 1950–2003 period, 114 countries saw their social status changed, with 58 upgrades and 56 downgrades. During the 1960–2003 period, 20 countries saw their status upgraded, and 20 saw their status downgraded.

Fifth, the population distribution of social modernization. In 2001, about 15% people (900 million) in the world lived in knowledge society, 68% people (4.1 billion) lived in industrial society, and 18% people (1.1 billion) lived in agricultural society. In the 122 countries with complete evaluation data, 18% countries (22) entered knowledge society, 74% countries (90) were in industrial society, and 8% countries (10) and many regions were in agricultural society. Meanwhile, about 188 aboriginal groups lived in primitive society (Table 6.23).

(2) Prospect

First, the time of completing first social modernization. Estimated at the average annual growth rate during the 1980–2003 period, the low-income countries on average require 81 years, and the world on average requires 13 years to complete first social modernization.

Second, the world's advanced level of social modernization. Calculated at the average annual growth rate during the 1980–2003 period, developed countries will see their second social modernization index rising about twofold in 2050 over their 2003 level.

Third, the world average level of social modernization. The world average level is roughly 50 years behind the average level of socially developed countries, and the

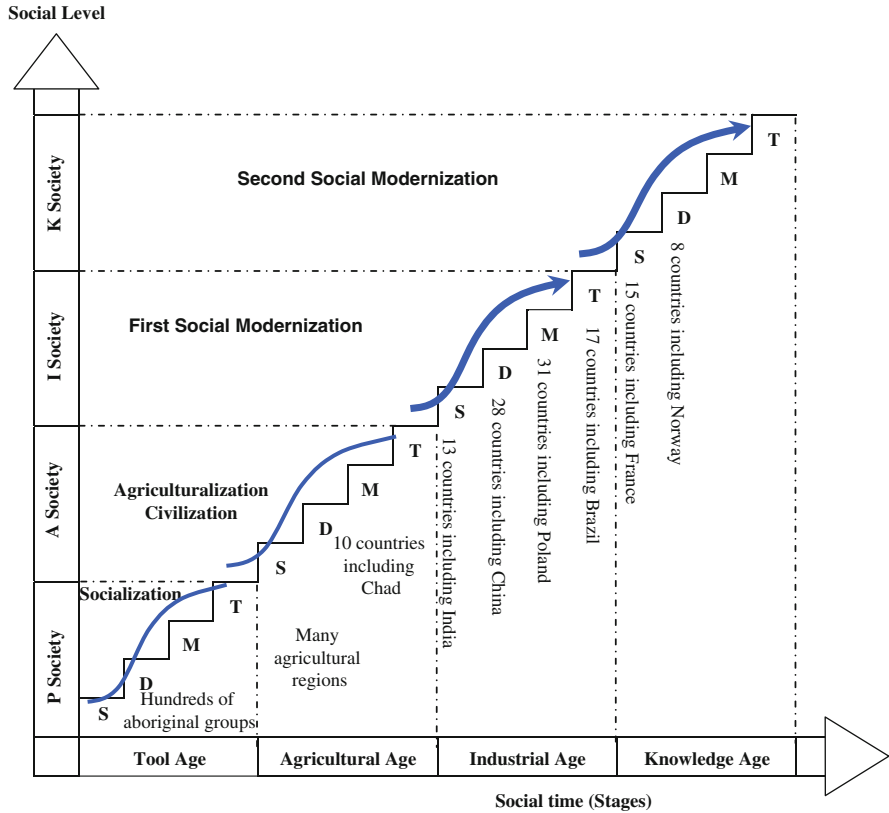


Fig. 6.11 Coordinates of world social modernization in 2003. Note: P, A, I, and K refer to primitive, agricultural, industrial, and knowledge, respectively. S, D, M, and T refer to the start, developing, mature, and transition stage, respectively. Social time refers to the time based on the frontier track of social development. Source: RGCMS (2005)

Table 6.23 Estimated world population distribution in 2001

Item	Classification standard and population distribution			Country distribution	
	Classification standard	Population (10,000)	Ratio (%)	Number of countries	Ratio (%)
Knowledge society	Entered second social modernization	90,000	14.7	22	18.0
Industrial society	World population—population of agricultural and knowledge societies	413,744	67.5	90	73.8
Agricultural society	Living at less than one international dollar per day	109,026	17.8	10	8.2
Primitive society	Living on (or once) hunting and gathering	520	0.08	(188 Tribes)	—
World total		612,770	100	122	100

Source: RGCMS (2006)

Table 6.24 Estimated levels of social modernization in twenty-first century

Item	2002	2010	2020	2030	2040	2050	2060	2080	2100
Number of countries entering second social modernization	23	26	32	42	48	54	59	62	65
Number of countries completing first social modernization	31	53	63	76	81	84	84	87	90

Source: RGCMS (2006)

world average level in 2050 will be roughly equivalent to the 2000 average level of socially developed countries.

Fourth, the national level distribution of social modernization. Calculated at the average annual growth rate during the 1970–2003 period, about 84 countries will complete first social modernization, and about 54 countries will enter second social modernization in 2050; about 90 countries will complete first social modernization, and 65 countries will enter second social modernization in 2100 (Table 6.24).

6.2.2 Theories

Social modernization theory is a theory explaining the phenomenon of social modernization. It is a branch of modernization theory. Currently, there are roughly two theoretical collections: classic social modernization theory and social modernization theory in the broad sense.

6.2.2.1 Classic Social Modernization Theory

The classic social modernization theory began to form in the 1950s, but its ideological sources date back much earlier. In fact, the birth of human society meant the sprout of social ideas, and the change of human society was inevitably accompanied by the evolution of social ideas. Before the birth of Christ, ancient Greek thinker Plato introduced the concept of *the Republic*, and ancient Chinese thinkers introduced the concepts of “society of great harmony” and “society of great peace.” In the twentieth century, “modernized society” became the pursuit of many countries and scholars. Ideal society has been the object thought and pursued by thinkers all the time, and social ideas date back long ago. However, the social ideas that had produced direct impacts on social modernization are the social ideas of Renaissance and Enlightenment. Sociology came into being in the middle of the nineteenth century. Although each social theory is more or less related to social modernization, the theories on social changes, such as social evolution theory, social transformation theory, and social development theory, are more closely related to social modernization.

As an important branch of classic modernization theory, classic social modernization theory was formed in the 1950s and 1960s. The publication of three works by American sociologists marked the birth of classic social modernization theory. They were the *Social System* (Parsons 1951), the *Passing of Traditional Society: Modernizing the Middle East* (Lerner 1958), and the *Modernization and the*

Table 6.25 Structure of classic social modernization theory

Category	Theory	Main contents	Representatives
General theory	Core theory	Basic rules and features of classic social modernization	
Branch theories	Modern society theory	Modern society theory, industrial society theory, etc.	T. Parsons, M. J. Levy
	Urbanization theory	Definition, process, structure, dynamics, model of urbanization, etc.	American Chicago School
	Social differentiation theory	Social polarization theory, rationalization theory, etc.	N. Smelser, M. Weber
	Sector theory	Education modernization, health modernization, social security modernization, etc.	
Related theories	Structural functionalism	Structure, function, differentiation, adaptation, and change of social system	T. Parsons, R. K. Merton
	Social system theory	Type, differentiation, integration, balance, control, and evolution of social system	T. Parsons, N. Luhmann
	Social evolution theory	Social evolution from low level to high level	
	Social development theory	Theory of development and dependency of underdeveloped countries, etc.	
	Other related theories	Circulation theory, conflict theory, interaction theory, transformation theory, diffusion theory, etc.	

Source: RGCMS (2006)

Structure of Societies (Levy 1966). So far, there has been no systematic and universally recognized general theoretic explanation about classic social modernization theory. Classic social modernization theory is a collection of academic ideas about classic social modernization (Table 6.25).

The *China Modernization Report 2006* analyzed the ideas and principles of classic social modernization theory and summarized the general theory of classic social modernization (Table 6.26), including the definition, process, result, dynamics, and model of classic social modernization.

(1) Definition

In general, classic social modernization is a social change since the eighteenth century. It is both a transition from traditional society to modern society, from agricultural society to industrial society, and from preindustrial society to industrial society and a process of underdeveloped societies to catch up and reach the advanced level of developed societies.

Table 6.26 General theory of classic social modernization

Aspect	Basic contents
Definition	Classic social modernization is a revolutionary social change since the eighteenth century. It includes the process and profound changes of the transition from traditional society to modern society, and also the process and change of underdeveloped societies catching up and reaching the advanced level of developed societies
Process	Classic social modernization is a historical process, which comprises social mobility, differentiation and integration, the mass application of nonbiological energies and modern science and technology, the change of population and family structures, and the change of social life, structure, and ideas. It has nine unique features
Result	The outcome of classic social modernization is the completion of the transition from agricultural society to industrial society. The features of industrial society have been summarized as the classic social modernity, which includes urbanization, social welfare, mobility, specialization, rationalization, universal primary education, mass communication, etc.
Dynamics	Classic social modernization is subject to the influence of many factors, including the economic, political, cultural, scientific and technological, population, environmental, and social factors
Model	Classic social modernization has diverse paths and models and path dependency and is subject to the influence of historical, geographic, and objective conditions. It is manifested in the diversity of urbanization model, national education system, public medical system, and social security system

Source: RGCMS (2006)

(2) Process

Classic social modernization is both a long and complex historical process. It mainly includes social mobilization, mobility, stratification, differentiation, and integration, the change of social structure, population and family structures, the urbanization of residential structure, the mass application of nonbiological energies and science and technology the change of public health and human health, the development of national education, the universalization of primary education, occupational division and specialization, the growth of social productivity and per capita income, the shortening of labor time and the extension of leisure time, family mechanization and electrification, the development of transport and communications, the establishment of social security system, and the change of social system and ideas.

The features of the classic social modernization process are basically similar to those of classic modernization. American scholar Samuel Huntington believes: modernization is a revolutionary, complex, systematic, global, long, staged, converging, irreversible, and a progressive process (Table 4.3). There have been many arguments over convergence and irreversibility, because somewhat different from social reality.

(3) Result

The outcome of classic social modernization is the completion of the transition from agricultural society to industrial society and becomes an industrial society. American scholar Frank Sutton compared the typical features of agricultural society

and industrial society (Huntington 1971). A mature industrialized society has many common features, which can be called classic social modernity. It mainly includes social mobility, stratification, differentiation and integration, small family, urbanization, rationalization, specialization, family mechanization, electrification, automation, social welfare, universal primary education, and mass communication. At the same time, it also has some negative effects, such as the rich–poor gap and the environmental, family, and moral problems.

Industrialized society is also modernized society. American scholar Levy compared the features of modernized society and nonmodernized society and came up with eight features of modern society (Levy 1966). All organizations in modernized society are highly specialized; because of high specialization, various organizations are mutually dependent, and their functions are not self-supporting; morality is of a universalistic nature, instead of the individuality determined by family and relative relations; state power is centralized but not totalitarian; social relations are rationalist and universalistic with limited functions and neutral feelings; it has developed exchange media and markets; it has highly developed bureaucratic organizations; families are small and have less functions.

(4) Dynamics

Classic social modernization is a complex process, and its dynamic mechanism is also complex. Currently, there is no unified cognition over the issue. There are roughly five schools. The first school is that economic development and industrialization are the main driving force of the modernization process (Popenoe 2000). The second school is that cultural change is the main impetus to modernization (Weber 1958). The third view is that the interaction between politics, economy, and culture promotes modernization (Inglehart 1997). The fourth view is that the promoters of innovation, diffusion, and change are the key factors for modernization (Harrison 1988). The fifth view is that diverse factors, including economic, political, cultural, environmental, social, scientific and technological and social factors and social planning, impact social modernization.

(5) Model

Classic social modernization has diverse paths and models, such as the international disparities in the model of population and family changes, the urbanization model, the public health system, the national education system, and the social security system.

Classic social modernization is not in isolation. It is subject to the influence of politics and culture and interacts with classic economic modernization. At the same time, it is subject to the constraint of the level of science and technology. Therefore, the analysis of the relations between classic social modernization and the national modernization and modernization in other spheres should become the content of the classic social modernization theory. Classic social modernization theory takes countries as the basic units. In the regions at the different administrative levels within a country, regional social modernization can be somewhat different from national social modernization, such as the difference in urbanization models.

Regional social modernization should be included into the research scope of the classic social modernization theory.

6.2.2.2 Social Modernization Theory in Broader Term

The social modernization theory in the broad sense is a theoretical interpretation of the phenomenon of social modernization during the eighteenth to twenty-first century. It is an application of the second modernization theory in the social sphere and has been introduced by Chinese scholar Chuanqi He. The social modernization theory in the broad sense comprises the general theory, branch theories, and related theories (Table 6.27). Here our discussions focus on the general theory, including the definition, process, result, dynamics, and model of social modernization (Table 6.28). So far, there has been very limited cognition of second social modernization and integrated social modernization, and the social modernization theory in the broad sense still has vast room for development.

(1) Definition

Social modernization is a form of expression for modernization in the social sphere.

The intension: social modernization is a frontier change and international competition in the social sphere since the industrial revolution in the eighteenth century. It comprises the formation, development, transformation, and international interaction of modern society; the innovation, selection, diffusion, and withdrawal of social factors; and the international competition, international differentiation, and stratification to catch up, reach, and maintain the advanced level of world society.

The extension: social modernization comprises world, national, and regional social modernization; comprises the modernization of social behavior, structure,

Table 6.27 Structure of social modernization theory in broad sense

Category	Theory	Main contents
General theory	Core theory	Definition, process, result, dynamics, and model of social modernization
Branch theories	Stage theory	First, second, or integrated social modernization
	Stratified study	Modernization of global, national, and regional society
	Subsphere study	Modernization in the subfields of population and health, learning and working, leisure and welfare, social environment, etc.
	Sector theory	Modernization in education, health, social security, energy, transport, communications, and other social sectors
Related theories	Other modernization theories	Classic modernization theory, postmodernization theory, reflective modernization theory, second modernization theory, etc.
	Related sociology theories	Urbanization, social change, social evolution, social development, social system theory, industrial society, knowledge society, etc.
	Other related theories	Informatization, quality of life, ecological sociology, modernism, postmodernism, etc.

Source: RGCMS (2006)

Table 6.28 General theory of social modernization in broad sense

Aspect	Basic contents
Definition	Social modernization, a modernization of the social sphere, is a social change and international competition since the industrial revolution in the eighteenth century. It is the frontier process of the formation, development, transformation, and international interaction of modern society; a compound process of the innovation, selection, diffusion, and withdrawal of social factors; and also an international differentiation and competition to catch up, reach, and maintain the world's advanced level of social development
Process	Social modernization is a historical process, which comprises social development, social transformation, international social competition, international social differentiation, and national social stratification; comprises change of social behavior, structure, system, and ideas; and comprises the world frontier of social change and the process of reaching the world frontier. During eighteenth to twenty-first centuries, the frontier track of social modernization can be divided into two major stages. Specifically, first social modernization is a transformation and profound change from agricultural to industrial society and from feudal to civic society, and its main features include urbanization, mobility, social welfare and universal primary education, etc.; second social modernization is a transformation and profound change from industrial to knowledge society and from material to ecological society, and currently, its main features include intellectualization, informatization, greening, universal higher education, etc. The coordinated development of the twice social modernizations is integrated social modernization. Social modernization will have new changes in the twenty-second century. It follows the ten basic principles of modernization (Table 2.15)
Result	The formation of social modernity, particularity, diversity, and side effects, the improvement of social efficiency and quality of life, the improvement of social welfare and equity, and the change of lifestyle, living ideas, and international social status. The result of first social modernization is the formation of first social modernity, particularity, and diversity, and its side effects include a widening rich–poor gap; the main marks for completing first social modernization are the competition of urbanization, social welfare system and the reaching of social efficiency and life standard to the advanced level of industrial society (the average level of industrial countries in the 1960s). The result of second social modernization is the formation of second social modernity, particularity, and diversity, and its side effects include information divide; the main marks for completing second social modernization are the completion of intellectualization, greening, and the reaching of social effectiveness and quality of life to the world's advanced level of knowledge society (some time in the future). The basic standard for realizing social modernization is for social effectiveness, quality of life, social structure, and system to reach the world's advanced levels at the time
Dynamics	The drive factors for social modernization include innovation, exchange, competition, adaptation, national interests, and social demand, include social driving forces (economic growth, scientific advance, and education development), social pooling forces (political development, cultural change, and globalization), and social pressures (population and environmental changes). The dynamic models include innovation driving, three-innovation driving, associated action, four-step super circulation, social compound interaction, innovation diffusion, innovation spillover, and competition driving (Table 2.20). Different countries have somewhat different dynamics for their social modernization in different stages

(continued)

Table 6.28 (continued)

Aspect	Basic contents
Model	Social modernization has diverse paths and models, is path dependent, and is subject to the influence of historical, geographic, and traditional factors. It has three basic paths in the twenty-first century: first social modernization path, second social modernization path, and integrated social modernization path. The corresponding basic models are the model of urbanization, the model of paralleled intellectualization and greening, and the model of paralleled new urbanization, greening, informatization, etc.

Note: There has been no unified definition of modern society. In general, modern society includes industrial society (preliminarily modern society) and knowledge society (advanced modern society). Industrial society is based on industry, and knowledge society is based on knowledge and is sometimes called postmodern society

Source: RGCMS (2006, 2010)

system, and ideas; comprises the modernization of population and health, learning and working, leisure and welfare, and social environment; and comprises the modernization of education and other social sectors and the change of the temporal–spatial distribution of social modernization.

In general, social modernization refers to the world frontiers of social change and the process to reach these frontiers, and includes the transition from agricultural to industrial society and the transition from industrial to knowledge society, the improvement of social effectiveness and quality of life, the change of lifestyle and living concept, the improvement of people’s literacy and health quality, and the change of social welfare, equity, and international social status. Countries are the basic units for social modernization study and practice, and regional social modernization is a component of national social modernization.

Social modernization is a change in the social sphere. Apparently, not all social changes belong to the scope of social modernization. In general, only the social changes that help promote productivity, social progress, and human development belong to the scope of social modernization.

In general sense, social development should include social progress and social adaptation, and social modernization is a collection of social development, social transition, international social competition, and the change of international social status (Table 6.29). The international social status can change in four ways: maintaining the advanced level of world society, narrowing the gap with the advanced level of world society, maintaining the same gap with the advanced level of world society, or widening the gap with the advanced level of world society.

Social modernization has three sources. The first is the partial inheritance and development of traditional society; the second is the partial negation and reversion (decomposition and turning) of traditional society; and the third is knowledge innovation, technological innovation, system innovation, and innovation diffusion. The traditional society here is a relative and dynamic concept. The traditional society in the course of first social modernization refers to agricultural society, while the traditional society in the course of second social modernization refers to industrial society.

Table 6.29 Conceptual model of social modernization

Item	Content
Hypothesis 1	Social progress refers to improvement of quality of life, social welfare, social effectiveness, and social equity
Hypothesis 2	Positive social adaptation refers to the positive change of lifestyle and living and social environment (higher rationality)
Hypothesis 3	Social transition refers to two transformations respectively from agricultural to industrial society and from industrial to knowledge society
Hypothesis 4	Change of international social status refers to the change of the international status of national social productivity and people's life quality
Deduction 1	Social development = social progress + positive social adaptation + social progress \times positive social adaptation
Deduction 2	Social modernization = social development \times social transition \times international social competition and change of international social status

Source: RGCMS (2006)

(2) Process

Social modernization is a complex, multilevel, and multipath process, which includes the change of social behavior, structure, system, concept, etc. The process of social modernization can be divided into two types: frontier process and catch-up process with both common and different features. During the eighteenth to twenty-first centuries, its frontier process comprises two stages: first and second social modernizations (Table 6.30). First social modernization has three waves, and second social modernization will have three waves. The two social modernizations have different contents and features (Table 6.31).

First social modernization is a transformation and profound change from agricultural to industrial society and from feudal to civic society. It includes the transitions from rural to urban society, from clan to welfare society, from autocracy to democratic society, from closed to open society, from natural to technological society, and from stable to mobile society. Its features include urbanization, social welfare, mobility, generalization, specialization, secularization, rationalization, mechanization, electrification, automation, technologization, high effectiveness, openness, equity, social differentiation and integration, universal primary education, etc.

Second social modernization is a transformation and profound change from industrial to knowledge society and from material to ecological society. It includes the transitions from urban to urban–rural balanced society, from physical to virtual society, from educational to learning society, from tense to leisure society, from mechanic to humanity society, and from national to world society. Currently, its features include intellectualization, informatization, intelligentization, suburbanization, urban–rural balance, greening, ecologization, naturalization, innovation, internationalization, diversification, individualization, leisure, rights of women and children, universal higher education, lifetime learning, etc.

If first social modernization is a preliminary social modernization and a transition from traditional to primary modern society, second social modernization is an advanced social modernization and a transition from primary modern to hypermodern

Table 6.30 Periodic table of social modernization in broad sense—change in social form

Stage (approx. starting year)	Social form and features	Social modernization
<i>Age of knowledge society</i>		
Transition stage (2050)	Advanced knowledge society: cultural experience and super-transport	
Mature stage (2020)	Moderate knowledge society: life engineering and barrier-free knowledge and information acquisition	<i>Second social modernization</i>
Developing stage (1992)	Preliminary knowledge society: higher education, networking, and learning	Knowledge revolution
Start stage (1970)	Initiation of knowledge society: knowledge, information, suburbanization, and greening	Intellectualization and greening
<i>Age of industrial society</i>		
Transition stage (1946)	Advanced industrial society: industrial society, welfare, and automation	
Mature stage (1914)	Moderate industrial society: social insurance, technologization, and electrification	<i>First social modernization</i>
Developing stage (1870)	Preliminary industrial society: compulsory education, electrification, and specialization	Industrial revolution
Start stage (1763)	Initiation of industrial society: modern industry, urbanization, and mobility	Urbanization and welfare
<i>Age of agricultural society</i>		
Transition stage (AD 1500)	Advanced agricultural society: agricultural society, commercialization, and scientific revolution	
Mature stage (AD 618)	Moderate agricultural society: agricultural society, systematization, and feudal society	
Developing stage (500 BC)	Preliminary agricultural society: farming, pastoral, civilization, and settlement	(Agricultural revolution)
Start stage (3500 BC)	Initiation of agricultural society: farming, nomadic, agriculturalization, and civilization	(Agriculturalization and civilization)
<i>Age of primitive society</i>		
Transition stage (10,000 years ago)	Horticulture, nomadic, patrilineal society, and new stone age	(Primitive agricultural revolution)
Mature stage (40,000 years ago)	Hunter-gatherer, matrilineal society, Chiefdoms society, socialization, and last of old stone age	(Socialization, Tool-making revolution)
Developing stage (200,000 years ago)	Hunter-gatherer, clan society, structuralization, and middle of old stone age	
Start stage (2,500,000 years ago)	Hunter-gatherer, bands, migration, and early stage of old stone age	

Note: The time of chronology and the features were based on the frontier track of the development of human societies

Source: RGCMS (2006)

Table 6.31 Two stages of social modernization in broad sense

Item	First social modernization	Second social modernization
Approx. time	1763–1970	1970–2100
Population and health	Urbanization, mobility, mechanization, electrification, automation, small family, legal marriage, differentiation, stratification, integration, public health, etc.	Intellectualization, suburbanization, urban–rural balance, informatization, intelligentization, greening, family diversification, population aging, longer life expectancy, rights of women and children, etc.
Learning and working	Specialization, technologization, rationalization, universal primary education, etc.	Individualization, innovation, diversification, ecologization, universal higher education, lifetime learning, etc.
Leisure and welfare	Social welfare, equity, public transport, etc.	Naturalization, informatization, leisurization, new features in future, etc.
Modernity	First social modernity, including industrial, urban, welfare, rational, technological, open, and democratic society, living standard, etc.	Second social modernity, including knowledge, information, ecological, learning, world, innovative, leisure and plural society, quality of life, etc.
Side effect	Rich–poor polarization, and side effects of machinery and organization, etc.	Information divide and side effects of networking, etc.

Source: RGCMS (2006)

society. The coordinated development of the twice social modernizations is integrated social modernization. Social modernization will have new changes in the twenty-second century.

The process of social modernization has 12 features: it is relatively predictable, global, long-term, staged, progressive, positive, adaptable, transitional, systematic, uneven, complex international competition, and an irreversible trend.

Social modernization is a sort of modernization and follows the ten basic principles (Table 2.15).

(3) Result

The outcome of social modernization includes the formation of social modernity, particularity, diversity, and side effects. The results of social modernization in different countries are both common and different. And the results of the two social modernizations are different (Table 6.31).

The result of social modernization comprises changes in six areas: the completion of the two social form transitions, the improvement of social efficiency and quality of life, the positive change of lifestyle and living concept, the improvement of human cultural and health quality, the drastic improvement of social welfare and equity, and the widening of the international gap in life quality and the narrowing of the international gap in social structure.

In the course of social modernization, some countries reach and maintain the advanced level of world society and become socially advanced countries, while

other countries are socially developing countries. The two types of countries can interchange. In general, about 20% countries reach and maintain the world's advanced level and belong to socially advanced countries, while about 80% countries fail to reach the world's advanced levels and belong to socially developing countries. Within a time span of 50 years, about 10% socially advanced countries can downgrade into developing countries, while about 5% socially developing countries can upgrade into advanced countries. The status change of the two types of countries is in a dynamic balance.

The goal of national social modernization is to complete first social modernization and transit from agricultural to industrial society; to complete second social modernization and transit from industrial to knowledge society; and to catch up, reach, and maintain the advanced level of world society and become socially advanced countries (socially modernized countries) or narrow its gap with international society.

Since the 1950s, the result of social modernization is correlative to its goal, and this correlation is gradually formed and reinforced while the modernization study growth.

(4) Dynamics

The drive force of social modernization comprises dynamic factor and principles (Table 6.28). Social modernization has different dynamics on different levels, in different countries, and in different stages. The dynamic model of the general theory of modernization can be used for social modernization (Table 2.20).

(5) Model

Social modernization has roughly three basic paths in the twenty-first century (Fig. 6.12). The path for first social modernization corresponds to the model of urbanization and social welfare, the path for second social modernization corresponds to the model of intellectualization and greening, and the path for integrated social modernization corresponds to the model of new urbanization, including the coordinated development of urbanization, suburbanization, social welfare, intellectualization, informatization, and greening.

In general, the process, result, dynamics, and model of social modernization can all be analyzed from the world, national, and regional perspectives. The contents and features analyzed from different perspectives are somewhat different.

The *China Modernization Report 2006* introduced the social timetable, periodical table, coordinates, and paths for social modernization in the broad sense and the conceptual model, quantitative model, objective model, and dynamic model of social modernization; discussed the staged theories of the social modernization theory in the broad sense, including second social modernization and integrated social modernization; and also discussed the methods for social modernization.

(6) Second Social Modernization

Second social modernization is a form of expression for social modernization and reflects the frontier change in the social sphere since the 1970s, which includes the

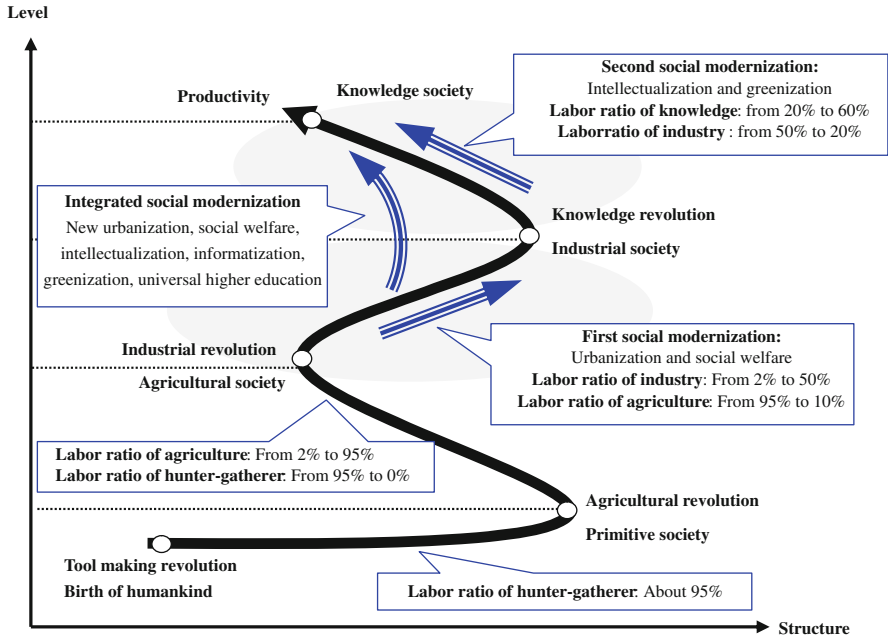


Fig. 6.12 Three paths for social modernization in twenty-first century. Note: the horizontal coordinate represents the labor structure of productivity. The structural graduation is the labor ratio between agriculture and hunter-gatherer (estimated) in the age of primitive economy, the labor ratio between hunter-gatherer and agriculture in the age of agricultural economy, the labor ratio between industry and agriculture in the age of industrial economy, and the labor ratio between material sector (including agriculture and industry) and knowledge sector in the age of knowledge economy. Source: RGCMS (2006)

transition from industrial to knowledge society and from material to ecological society and includes the improvement of social effectiveness and quality of life, the improvement of social welfare and equity, international social competition, and the change of international social system.

Second social modernization is a complex historical process, which includes social development, social transition, international social competition, and the change of national social status and includes the change of social life, behavior, structure, system, and ideas. In relation to industrial society, knowledge society is a new social form, which has many new features (Table 6.32).

(7) Integrated Social Modernization

Integrated social modernization is a basic path for social modernization in the broad sense in the twenty-first century. It comprises the interaction between two social transitions (from agricultural to industrial society and from industrial to knowledge society) and the continuous transition to knowledge society; comprises

Table 6.32 Main features of knowledge society

Item	Main features
Social intellectualization	Knowledge becomes the basis and axial of society. Social structure is intellectualized, and intellectual workers outnumber the total sum of all other workers. Consumption structure is intellectualized, and universal higher education and lifetime learning are realized. Knowledge innovation becomes an important source of social wealth and rights
Informatization and networking	Cyberspace becomes the second space, with Internet being popularized and cyberspace being formed. People travel between cyberspace and physical space, and lifestyle is digitized and internationalized
Innovation socialization	Innovation becomes national behavior. While technological innovation is popularized, knowledge innovation becomes the focus of international competition, system innovation becomes the key to social progress, and national innovation system becomes the policy tool to drive innovation
Intelligentization	Artificial intelligence is popularized, and working and living environments gradually become intelligent
Management personalization	With knowledge capital as its core and information network as its basis, management moves from mechanization to personalization
Suburbanization and community revives	People flow two-way between cities, suburbs, and rural areas, and urban-rural dynamic balance is gradually reached
Greening and ecologization	Green and eco-friendly lifestyle and ideas gradually occupy leading positions, and man and nature exist in harmony
Pluralization and diversification	Plural and diverse social life and concept, and equal status for women, children and minority groups, etc.

Source: He (1999)

the coordinated development of urbanization, suburbanization, social welfare, intellectualization, informatization, and greening and the continuous transition to intellectualization and greening; and comprises the improvement of social effectiveness and quality of life, the improvement of social welfare and equity, international social competition, and the change of international social status.

Integrated social modernization is a historical process, which features the coordinated development of two social modernizations and the continuous transition to second social modernization. It comprises the change of social behavior, structure, system, and ideas and the international competition to catch up and reach the advanced level of world society. Integrated social modernization comprises three stages: new urbanization and informatization, suburbanization and intellectualization, and intellectualization and greening. Its goal is to catch up with the world's advanced level of social modernization. The mark for realizing integrated social modernization is for social effectiveness, quality of life, social welfare, and social system to reach the world's advanced levels at the time.

6.3 Political Modernization

Political modernization refers to the modernization of the political sphere, and it is a manifestation of modernization phenomena in the political field. It includes staged and stratified political modernization, the modernization of political subfields and political sectors (Fig. 6.13). Political modernization occurs mainly at national level and may extend to the world, international, regional, organizational, and individual levels.

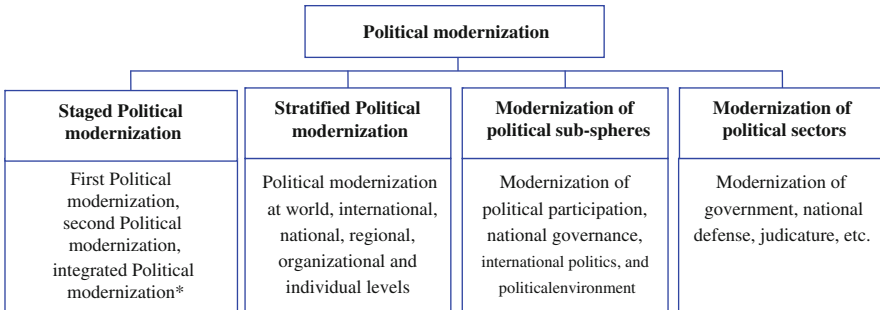


Fig. 6.13 Objects of political modernization study. Note: (*Asterisk*) Integrated political modernization means the coordinated development of twice political modernizations and is a basic path for political modernization in developing countries

6.3.1 Studies

Political modernization research is the research on the modernization of the political sphere, and it is a part of modernization research. The research may date back to the eighteenth century and may be approached from three perspectives including the historical process, objective reality, and future prospects.

There is no unified definition of politics and political sphere as well. In general, politics refers to the activity of defining, distributing, and managing public resources, interests, and power; its extension embraces stratified politics, political process, political system, and political environment (Fig. 6.14). The political sphere is the field where public affairs are defined, participated in, and managed. The modernization of the political sphere is called political modernization for short.

6.3.1.1 Research Paradigm

The objects of political modernization study are the modernization of political sphere, including the modernization of political participation, national governance, international politics, and political environment, as well as political modernization

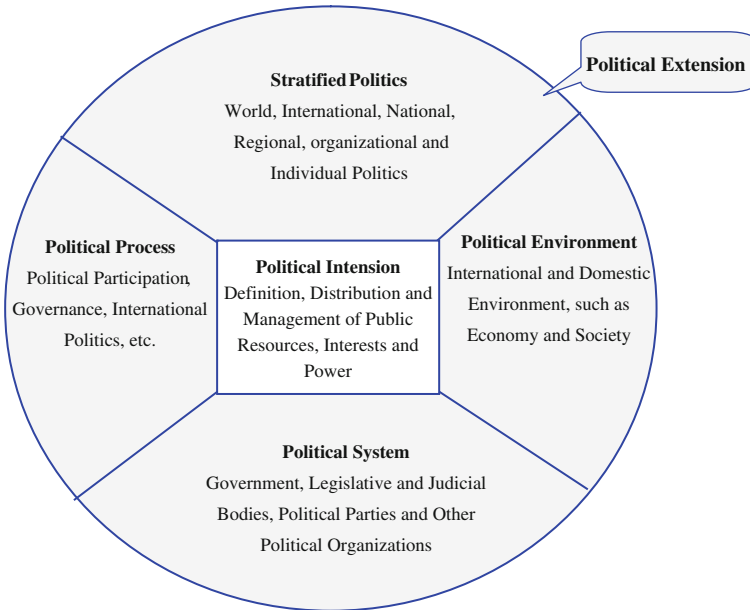


Fig. 6.14 Operational definitions of political intension and extension

at world, national, regional, organizational, and individual levels. The research contents include the modernization of political behavior, structure, institutions, and ideas, as well as the process, outcomes, dynamics, and models of political modernization, all of which constitute a research matrix (Table 6.33). Other objects such as stage-specific political modernization and the modernization of political sectors are also included in the research.

Political modernization research is a type of field-specific modernization research where the methodology of modernization study can be adopted. There are plentiful analysis methods, for example, time-series analysis, cross-sectional analysis, process analysis, case study, quantitative evaluation, and coordinates analysis. The research may target the whole process or a particular stage of the process, or the world, a country, or a region, and can be done for academic or policy purposes. Different types of research have different features.

6.3.1.2 Historical Facts

Political modernization started in the second half of the eighteenth century as a form of political change. Generally, political and economic modernizations are closely related with each other in a complex manner. Similar to the economic modernization, the frontier trajectory of political modernization consists roughly of the first and second modernization as well as six waves (Table 6.34). *The Second*

Table 6.33 The matrix of political modernization study

Content		Object		
		Political sphere	Political participation, national governance, international politics, and political environment	Politics at world, national, regional, organizational, and individual levels
		Political modernization	Modernization in four political subspheres	Political modernization at five levels
Element	Behavior	Modernization of political behavior, structure, institution, and ideas	Modernization of political behavior, structure, institution, and ideas in the four political subspheres	Modernization of political behavior, structure, institution, and ideas at the five levels
	Structure			
	Institution			
	Idea			
Aspect	Process	Process, result, dynamics, and model of the political modernization	Process, result, dynamics, and model of political modernization in the four political subspheres	Process, result, dynamics, and model of political modernization at the five levels
	Result			
	Dynamics			
	Model			

Note: Political participation involves civil rights and obligations, news media, political organizations and activities, etc. National governance involves legislation, judicature, administration, national defense, diplomacy, civil servants, etc. International politics involves international relations, systems and institutions, etc., and international political modernization intersects with international modernization and latter has been discussed in Chap. 5. Political environment involves domestic political environment (economic, social, cultural, and ecological environment) and international political environment. The research contents of political modernization also include stage-specific political modernization, the modernization of political sectors, political frontier and trend analysis, and interactions between the elements of political modernization and different fields

Modernization: Inspiration of Human Civilization Process (He 1999) provides a systematic analysis of the process of and facts about political modernization.

(1) Process Analysis

First of all, the first wave of political modernization emerged roughly during the First Industrial Revolution (1763–1870), mainly in such countries as the UK, USA, and France, which included—among other things—political revolutions and democratic reforms as well as male adults’ gradually obtaining voting right (Table 6.35). The democratization of political participation included the recognition of men’s voting right in 1790 in the aftermath of the French Revolution in 1789, the expansion of men’s suffrage in the UK from 1832 onward, and the US and France’s promulgation of civil rights acts. The institutionalization of national governance included the UK’s introduction of limited monarchy and cabinet system; the US’s founding of the presidential government with the separation of the legislative, judicial, and executive powers; and France’s enforcement of secularized powers and founding of a republic. During this period, countries that gained independence included the USA (1776), Argentina (1816), Brazil (1822), Mexico (1822), Greece (1829), and Belgium (1831).

Table 6.34 Main stages of political modernization

Wave	Approx. time	Content	Annotation
First	1763–1870	Constitutional democracy, elite politics, the first wave of democratization	<i>First political modernization</i> Democratization, secularization,
Second	1870–1945	Mass democracy, class politics, the second wave of democratization	institutionalization, centralization, modern politics, industrial politics
Third	1946–1970	Social democracy, public politics, the third wave of democratization	
Fourth	1970–2020	Cyber democracy, consultative democracy, the fourth wave of democratization	<i>Second political modernization</i> Service orientation, networking, ecologicalization,
Fifth	2020–2050	Global democracy, green politics, the fifth wave of democratization	decentralization, postmodern politics, knowledge politics
Sixth	2050–2100	Cosmopolitan politics, universal politics, etc.	

Note: The fifth and sixth waves are merely forecasts

Second, the second wave of political modernization happened roughly during the Second Industrial Revolution (1870–1913) and between World Wars I and II (1914–1945). It mainly included the deepening and spreading of democratization, female adults' gradually obtaining suffrage, and the initial establishment of such modern political systems as political party system, parliamentary system, universal suffrage, constitutionalism and cabinet government system, etc. The development of nationalism expedited the rise of national independence movements. Fascist and socialist movements happened mainly in industrialized European countries and produced a considerable influence on European policies. The success of the Russian socialist revolutions changed the process of world history.

Modern political institutions stood the test of the two World Wars (Table 6.36). Modern democratic system continued to exist in the UK, France, USA, Switzerland, the Netherlands, Belgium, Scandinavian countries, Latin American republics, and Dominions of the British Commonwealth and played an important role in wartime. The Great Depression produced massive impact on politics, but US President Franklin D. Roosevelt's New Deal saved capitalism as some scholar believed. Modern political institutions saw great development and improvement during the wars and depression. This marked, to a certain degree, the maturity of political modernization in industrialized countries. In 1945, the United Nations was founded, bringing political modernization into a stage of globalization.

Third, the third wave of political modernization happened roughly during the Third Industrial Revolution (1946–1970). It mainly included the deepening of democratization, the spreading of universal suffrage, the development of civil rights, the rise of public political and environmental movements, and colonies' independence movements and democratization waves, etc. The development of domestic politics included the progress in democracy and the decentralization of powers, the increased, say, from varied social classes, and women's and ethnic

Table 6.35 Historical process of political democratization

Country	Starting year					Time span
	Freedom of speech	Long-standing parliamentary system	Men's suffrage	Women's suffrage	Universal suffrage	
UK	1795	1830	1910/1918	1918/1928	1928	133
France	1791	1870	1790/1840	1944	1948	157
USA	1795	–	1776	1920	1970	180
Belgium	–	1830	1890/1919	1919/1948	1948	–
Switzerland	1803	1840	1840/1848	1971	1971	168
Germany	1871	1870	1840/1870	1918	1949	78
Greece	–	1920	1840	1927/1952	1952	–
Spain	–	1860	1860	1931	1933	–
Austria	1867	1890	1880/1918	1918	1955	88
New Zealand	–	–	1893/1907	1893	1907	–
Finland	–	1900	1900/1906	1906	1906	–
Norway	–	1810	1898/1900	1907/1913	1913	–
Denmark	1849	1840	1901/1910	1915	1950	101
Netherlands	1581	1840	1887/1910	1919	1922	341
Italy	–	1840	1910/1919	1919/1945	1945	–
Australia	–	–	1902/1903	1902/1962	1962	–
Sweden	1776	1860	1909/1910	1861/1921	1918	142
Portugal	–	1910	1910	1931/1976	1976	–
Ireland	–	1920	1910/1919	1918/1928	–	–
Argentina	–	1853	1912	1947	1951	–

Note: Views vary in when suffrage was introduced in some countries, and the first option is probably the year when only some people obtained suffrage. Time span refers to the years between recognizing the freedom of speech and introducing universal suffrage. The democratization process in some countries, for example, France, Spain, and Italy, suffered setbacks and reversals. In Germany, universal suffrage was introduced in 1919 and 1933, respectively, but discontinued until its resumption in 1949. Tilly argues that there are four waves of democratization, which occurred in the 1940s, after World War I, after World War II, and after 1989 (Tilly 2003)

Source: Tilly (2003), Janoski (1998), UNDP (2002)

Table 6.36 Democratization in the twentieth century

Year	1900	1922	1942	1962	1973	1990	2001
Number of democratic countries	0	29	12	36	30	58	121
Number of nondemocratic countries	55	35	49	75	92	71	71
Total number of countries	55	64	61	111	122	129	192
Percentage of democratic countries/%	0	45	20	32	25	45	63

Note: Democratic countries refer to the countries whose civilian governments were formed through competitive elections by voting of all adults. In 1900, no countries were up to the democratic country standard, and there were about only more than ten countries where male adults were granted suffrage. The numbers of countries from 1922 to 1990 exclude countries with a population below one million

Source: Huntington (1991), Tilly (2003)

minorities’ obtaining equal status. The students’ movement in the late 1960s expressed the calls for peace, humanism, and justice. The change in international politics was quite remarkable. For example, more and more countries joined the United Nations, the Cold War was waged between the USA and the Soviet Union and their respective allies, Europe moved to revitalization from decline, and the Third World emerged in the world political arena, etc.

Fourth, the fourth wave of political modernization happened roughly during the Knowledge and Information Revolution (1970–2020). It mainly included the diversification of democracy (consultative democracy, cyber democracy, participating democracy, etc.), the diversification, decentralization, individuation and internationalization of politics, the rise of environmental politics and human rights politics, new public administration and e-governance as well as the democratization waves in eastern European countries.

Political modernization includes the modernization of civil rights and obligations. The developmental sequence of civil rights varies from country to country; though different in contents, civil rights and civil obligations should be in equilibrium (Janoski 1998). In some countries, civil rights develop gradually, from legal rights, political rights, social rights to participation rights. According to the average value of advanced countries (Table 6.37), legal rights (excluding property rights for married women which were introduced in the twentieth century) emerged in the eighteenth and nineteenth centuries, political rights in the nineteenth and twentieth centuries, social rights in the first half of the twentieth century, and participation rights in the second half of the twentieth century.

Fifth, the fifth and sixth waves of political modernization are “conjectures” about the future. The fifth wave is expected to happen between 2020 and 2050,

Table 6.37 Structure and time sequence of civil rights

Legal rights	Years	Political rights	Years	Social rights	Years	Participation rights	Years
Men’s property right	222	Men’s suffrage	107	First right	92	First right	22
Freedom of speech	176	Men’s universal suffrage	91	Second right	80	Second right	9
Freedom of belief	158	Women’s universal suffrage	70	Third right	68	Third right	3
Married women’s property right	54	Universal suffrage	61	Fourth right	58		
				Fifth right	36		

Note: In this table, years mean the average value of the aggregate years from its beginning year of the rights to 1995. Sample countries for legal rights were 10 advanced countries, and those for other rights were 18 advanced countries. Social rights consist of five rights, to compensation for industrial injury, to retirement benefit, to health care, to unemployment insurance, and to subsidy for families with financial difficulties, respectively. Participation rights include the rights to labor and capital joint meeting, codetermination, and labor market policy protection, respectively. Different countries had different sequences of enforcing different social and participation rights. It is based on the data of Janoski (1998)

likely to be characterized by green politics, bionic politics, global democracy, etc. The sixth wave is expected to happen between 2050 and 2100, likely to be characterized by cosmopolitan politics, universal politics, etc.

(2) Basic Facts About Political Modernization

First, facts about political participation. From the eighteenth century onward, civil rights were gradually expanded and deepened, the suffrage was gradually extended to the entire adult population, trade unions and strikes in some advanced countries were on the decline, and the political influence of news media expanded. The nineteenth century saw the rise of party politics and the gradual advancement in multiple ways of democratization. From the twentieth century onward, democratization fluctuated (Table 6.36), and human rights began drawing attention; in the late twentieth century, cyber democracy, consultative democracy, environmental politics, etc., emerged.

Second, facts about national governance. Since the eighteenth century, we saw the complication and secularization of the political system, the improvement of government capacity, the swelling of government, and the constant flux of state policies, and the nineteenth century witnessed the democratization and professionalization of national governance and the rise and then fall of political corruption in some advanced countries. From the twentieth century onward, some advanced countries saw the declining support of their governments, and from late twentieth century onward, the trends of government informatization, transparency, marketization, and service orientation became increasingly noticeable. The eighteenth century saw the standardization and nationalization of the military and fluctuation in its scale, the growth of defense expenditure, the professionalization and standardization of diplomacy, and the gradual increase in the number of diplomatic personnel; from the nineteenth century onward, the military became mechanized and professionalized. The twentieth century witnessed military professionalization and informatization as well as diplomatic diversification and service orientation.

Third, facts about international politics. From the eighteenth century, the frequency of international wars did not fall, but the situations varied greatly from country to country; there were great changes in the distribution of international wars and in the structure of countries engaged in the wars; and intergovernmental international organizations saw growth both in quantity and in membership. From the nineteenth century onward, international trade and investment continued to grow, and international contacts were enhanced. The twentieth century saw the increase in the number of diplomatic relations and in the degree of interdependence between countries, the fluctuant international trade in weapons, the growth of the aggregate foreign aid that developing countries received and of the per capita international aid, the decline in the percentage of advanced countries' foreign aid in their GDP and of foreign aid in recipient countries' GDP, the rapid change of international politics, the increasing numbers of international conventions and signatory countries, and the growing numbers of international migrants.

Fourth, facts about political environment. Over the past 300 years, the international political environment changed dramatically, and domestic political

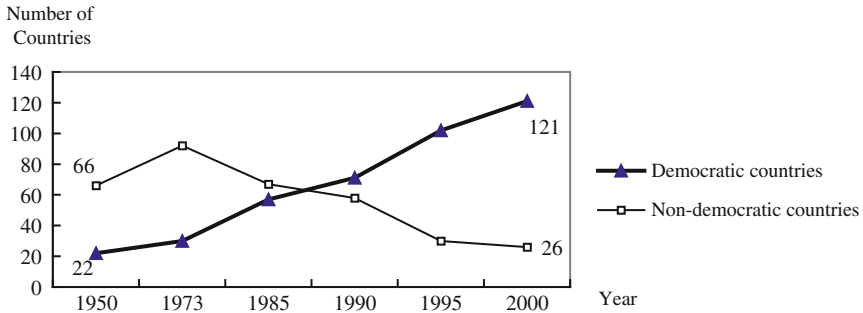


Fig. 6.15 Numbers of democratic countries in the second half of the twentieth century. Note: the number of democratic countries between 1985 and 2000 includes partly and completely democratic countries. It is based on the data of the UNDP (2000, 2002) and Huntington (1991)

environment differed greatly from country to country. From the eighteenth century onward, modernization gradually became the trend, and more and more countries started modernization; the century also witnessed the growth in world population, per capita wealth and per capita consumption, and the decline in per capita some natural resource. From the nineteenth century, nationalism saw climaxes once and again, the number of independent countries increased, and the international system changed time and again. From the 1950s onward, democracies increased both in number and percentage (Fig. 6.15), interdependence between countries increased, but international conflicts continued to exist.

Fifth, comprehensive facts about political modernization. Since the eighteenth century, political life, structure, institutions, and concepts have been changing, in nonlinear and multiple ways, and a portion of traditional political elements continue to exist and function.

(3) Inspirations from the History of Political Modernization

First of all, political modernization is nonlinear. Advanced countries' political modernization experienced two shifts, that is, from traditional to modern politics, including from feudal, autocratic, and religious politics to public, democratic, and secular politics, and from modern to postmodern politics, including from centralized, physical, and bureaucratic politics to decentralized, ecological, and self-government politics (Fig. 6.16).

Second, political modernization is reversible. The discontinuity or reversal of political modernization is common in both advanced and developing countries. When an economic or social crisis occurs, political modernization is likely to face challenges.

Third, there is not only a single-plank bridge but rather a variety of path options to political modernization. It might be a revolution, like the French Revolution, or a reform, as in the UK in 18th century. It may give priority to democratization, to coordinated development of democratization and industrialization, or to industrialization first and then democratization. In the twentieth century, Finland gave

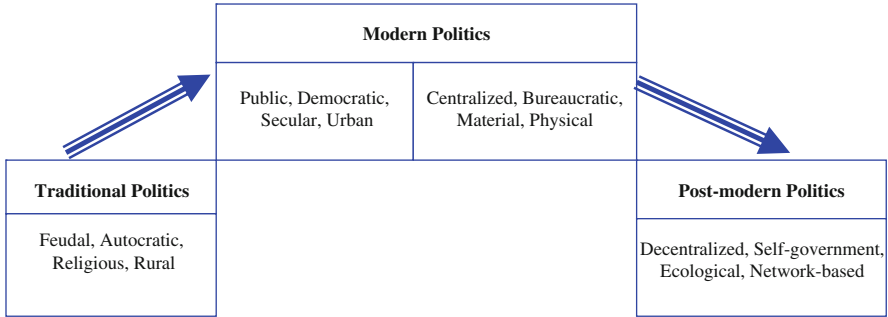


Fig. 6.16 Two shifts in the political modernization of advanced countries

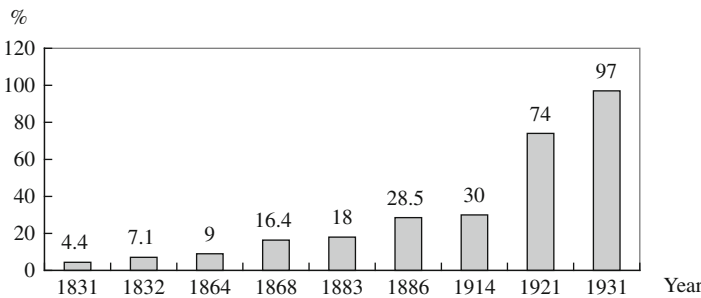


Fig. 6.17 Percentage of voters in the total population of adults in the UK. Note: it is based on the data of Dahl (1998)

priority to democratization while Japan and South Korea to industrialization, but all of them successfully turned into advanced countries from developing ones.

Fourth, political modernization is of path dependency. Different countries’ political modernization is influenced by their own political and cultural traditions, their respective development levels, and the international environment.

Fifth, political modernization is partly predicable. The relationship between democratization and economic development is complex. Generally, economic development promotes and consolidates democratization, but there are some exceptions; educational development and informatization help to expand democracy.

Sixth, political modernization is of not only international convergence but also diversity. In the twentieth century, democratization was the world trend, and the structure of government had the feature of international convergence, as in the arrangement of government departments which was largely similar; political institutions vary greatly among advanced countries, for example, constitutional monarchy, parliamentary republicanism, and presidential republicanism.

Seventh, political modernization is a long-standing process (Fig. 6.17). Between the eighteenth and nineteenth centuries, no countries were up to the standard of democracy. According to the experience of nine advanced countries, it took them about 150 years to move from recognizing the freedom of speech to introducing universal suffrage

(Table 6.35). Some countries that gained independence in the twentieth century adopted the “one-step” democracy, whose outcome remains to be seen.

Finally, political modernization is a global process. In 2000, multiparty elections were practiced in about 140 countries in the world; of these countries, 82 were completely democracies, and their populations accounted for 57% of the world’s total (UNDP 2002).

6.3.2 Theories

Political modernization theory is about the phenomenon of political modernization and represents a field-specific modernization theory. It is actually a collection of three theories: classical modernization theory, political modernization theory in broad sense, and the expositions on politics in different modernization theories, the last part of which can be found in Chap. 4.

6.3.2.1 Classical Political Modernization Theory

The classical political modernization theory, an important branch of the classical modernization theory, was established in the 1950s and 1960s. The publishing of the works by American political scientists, including *The Political System* (Easton 1953), *The Politics of the Developing Areas* (Almond and Coleman 1960), *Political Modernization in Japan and Turkey* (Ward and Rustow 1964), *The Politics of Modernization* (Apter 1965), *Social Origins of Democracy and Autocracy* (Moore 1966), and *Political Order in Changing Societies* (Huntington 1968), marked the birth of the classical political modernization theory. Though there is abundant academic literature on political modernization, the classical political modernization theory has so far had no systematic, acknowledged general theoretical expositions.

There are generally two sources of the classical political modernization theory: studies and explanations about political modernization by political scientists as well as those by modernization scholars in nonpolitical areas (e.g., history and sociology). By putting together their subjects of study and relevant thoughts, the structure of the classical political modernization theory (Table 6.38) can be formed, and its general theory—including definition, process, outcomes, driving forces, and models (Table 6.39)—summarized.

(1) Definition

There is no standard definition of classical political modernization. Generally, it is the political change in the process of classical modernization, and the transition from traditional to modern politics, from autocratic to democratic politics, and from religious to secular politics.

Indian scholar Desai holds that the political change of modernization embraces four features: *the legitimacy of sovereignty was not god-given but secularly recognized by and based on responsibility for the people; political rights were gradually extended to the entire adult population and fused into a generally accepted order of morality; the scope of politics was continuously expanded and*

Table 6.38 Structure of classical political modernization theory

Classification	Theories	Main contents
General theory	Core theory	The definition, process, outcomes, driving forces, models, etc., of the classical political modernization
Branch theories	Democratization theory	The definition, process, models, etc., of democratization
	Modernization of civil rights	Modernization of civil rights and obligations
	Modernization of public administration	Modernization of public administration
Relevant theories	Modernization of political sectors	Modernization of government, national defense, laws, etc.
	Politics	Development politics, comparative politics, political system, history of politics, history of political ideology, etc.
	Other relevant theories	Classical modernization theory, dependency theory, world systems theory, etc.

Table 6.39 General theory of classical political modernization

Aspect	Basic contents
Definition	Classical political modernization is the political change in the process of classical modernization, and the transition from traditional to modern politics and from autocratic to democratic politics
Process	Classical political modernization is a historical process, including the rationalization and secularization of political authority, the differentiation and specialization of political structure, the democratization and institutionalization of political participation, national governance becoming highly efficient and rational, etc.
Outcomes	The main outcome of classical political modernization is the formation and diffusion of classical political modernity. The characteristics of modern politics are summarized as classical political modernity, including being democratic, polarized, highly efficient, rule of law, bureaucratic, specialized, secular, rational and popular, etc.
Driving forces	Classical political modernization has a great many influencing factors, including economy, society, culture, science and technology, international relations, etc.
Models	Classical political modernization embraces a diversity of paths and models, is of path dependency, and is subject to historical, geographical, and objective conditions. These are manifested in such aspects as the diversity of political modernization paths, political systems, democratic models, etc.

the authority of political agencies enhanced; the political ruling took the people as its policy subject, beneficiary and legal person (Black 1976).

There are three views as to the relationship between political development and political modernization: political development is just political modernization, political development is a constituent part of political modernization, and political modernization is a form of manifestation of political development in modern societies.

(2) Process

American political scientist Huntington holds that political modernization embraces three aspects (Huntington 1968):

- (a) *Rationalization of political authority. The singular, secularized and nationwide political authority supersedes all kinds of traditional, religious, family or ethnic political authority. Government is a product of mankind, rather than a product of the nature or god. The nation state is entitled to external sovereignty without interference by other countries; the central government is entitled to internal sovereignty, not influenced by any local or regional power. The state is integral, and the state power is centralized to the nationally accepted nationwide legislature.*
- (b) *Political structural differentiation and functional specialization. Various specialized functional departments, such as legislative, military, administrative and scientific departments, should be all operated by specialized organs with decision-making power. Administrative institutions at all levels should become more sophisticated, complex and disciplined. The distribution of positions and powers should be based more on personal achievements and abilities.*
- (c) *Increased level of political participation. All of the groups and classes of the whole society participate extensively in politics. In modern countries, citizens directly participate in and are influenced by government affairs. The people participate in politics beyond rural and urban levels, and there is the need to establish political institutions like parties that are intended to organize such participation.*

(3) Outcomes

The main outcome of classical political modernization is the formation of classical political modernity and diversity (Table 6.39).

Ward and Rustow summed up eight features of modern politics (Ward and Rustow 1964): *a highly different and functionally specialized government organization institution; highly integrated internal government structure; rational and secular political decision-making procedure; large numbers, wide coverage and high efficiency of political and administrative decisions; the people's extensive, effective identity with the country's history, territory and nationality; the people's broad interest and enthusiastic participation in political institutions, though not necessarily participating in decision making; distribution of political roles based on personal achievements rather than attribution; judicature and administration based mainly on a secular, not-a-particular-person-targeted legal system.*

(4) Driving Forces

There has been no consensus on the driving forces of classical political modernization.

Marx thinks that *economy is the base and political institutions are superstructure, and that the economic base determines and constrains superstructure which in turn reflects and acknowledges the economic base* (Storey 1993). According to this thought, economic development is the driving force of political modernization. History shows that the relationship between economic development and democratization is complex, rather than being simply linear.

The Protestant ethic, Weber says, is the spiritual base of modern economic life and the important root cause of European capitalism and modernization (Weber 1904). This argument is considered to be a kind of “cultural determinism.” Weber’s ideas about rationalization and bureaucratization have a far-reaching influence on modernization research. Rationalization and bureaucratization represent two important features of political modernization.

According to Huntington, *a political institution must, above all, enable policy innovation, to successfully address problems facing modernization; it must be able to successfully assimilate all kinds of new social influences created by modernization; institutionalization is crucial for political modernization, and adaptation, complexity, self-determination and cohesion are the indicators for measuring the level of institutionalization* (Huntington 1968).

(5) Models of Classical Political Modernization

Huntington holds that the UK, France, and the USA took a different path of political modernization each (Huntington 1968). The UK practices constitutional monarchy, adopting the democratization road of parliamentary reform; France follows republicanism, whose political change was revolutionary and had several reversals; the USA adopts the presidential system, whose democratization was progressive.

Moore thinks, *Political modernization has three models: the first is the progressive model of “violent revolution + reformism,” as in the UK, US and France; the second is the zigzag model of “reformism + fascism + reformism,” as in Germany and Japan; and the third is the model of “farmers’ violent revolution + totalitarianism (or centralism),” as in Russia* (Moore 1966).

Lijphart argues that the model of “consensus democracy” has a better effect than that of “majority democracy” (Lijphart 1999).

6.3.2.2 Political Modernization Theory in Broad Sense

Raised by Chinese scholar Chuanqi He, the political modernization theory in broad sense serves as a theoretical explanation about the phenomenon of political modernization between the eighteenth century and the twenty-first century, and it is the application of the second modernization theory in the sphere of politics. It includes the general theory, branch theories, and relevant theories (Table 6.40). Below is a discussion of its general theory (Table 6.41), including five aspects of political modernization: definition, process, outcomes, dynamics, and models. Currently, there is a very limited knowledge of the second political modernization and integrated political modernization. The political modernization theory in broad sense is yet to develop.

(1) Definition

Political modernization is a manifestation of modernization in the sphere of politics.

The intension: political modernization is a sort of frontier change and international competition in the sphere of politics since the industrial revolution in the eighteenth century; it includes the formation, development, transition, and

Table 6.40 Structure of political modernization theory in broad sense

Classification	Theories	Main contents
General theory	Core theory	The definition, process, result, dynamics, models, etc., of political modernization
Branch theories	Stage theory	First and second political modernization, integrated political modernization
	Stratified study	Modernization of world, international, national, regional, etc.
	Subsphere study	Modernization in the subfields of political participation, national governance, political environment, political life, structure, institutions, and concepts
	Sector theory	Modernization of government, legislation, justice, national defense, diplomacy, public administration, etc.
Relevant theories	Other modernization theories	Classical modernization theory, postmodernization theory, ecological modernization theory, reflexive modernization theory, second modernization theory, dependency theory, world systems theory, globalization theory, etc.
	Politics-related studies	Development politics, comparative politics, international relations theory, political economy, etc.

international interaction of modern politics, the innovation, selection, diffusion, and withdrawal of political elements, and the international political competition for and national stratification as a result of catching up with, reaching, and maintaining the world's advanced level.

The extension: political modernization includes the modernization of political behavior, structure, institutions, and concepts; the modernization of political life, system, and culture; the modernization of political participation, national governance, international politics and political environment, and stage-, level-, and sector-specific political modernization; the interaction between politics and modernization in other fields; and the change in the temporal and spatial distribution of political modernization.

Generally, political modernization refers to the world frontiers of political change and the process and action to reach these frontiers and includes the transitions from traditional to modern politics and from modern to postmodern politics, includes the rationalization and democratization of political power, the legalization and equalization of political participation, the institutionalization and specialization of political system, and the rationalization and increased efficiency of political behavior.

Political modernization is an intersection of political changes and modernization. Obviously, not all political changes can be defined as part of political modernization. Generally, only those conducive to the rationalization and equalization of political participation, to the democratization and increasing efficiency of national governance, and to human liberty and overall development are truly political modernization (Table 6.42).

In general, political modernization roughly has three sources (Table 6.43): succession, transition, and innovation. Political modernization in different periods and subfields has different requirements (Table 6.44). Broadly, the basic

Table 6.41 General theory of political modernization in broad sense

Aspect	Basic contents
Definition	Political modernization is modernization in the sphere of politics. It is the political change and international competition since the industrial revolution of the eighteenth century; the frontier process of the formation, development, transformation, and international interaction of modern politics; the composite process of the alternate innovation, selection, diffusion, and withdrawal of political elements; as well as the international political competition for and national stratification as a result of catching up with, reaching, and maintaining the world's advanced level, etc.
Process	Political modernization is a long-standing historical process, including, among others, political development, political transition, international political interaction, and the change of international political status; the change of political behavior, structure, institutions, and concepts; and the democratization and rationalization of political culture, political participation and governance, world frontier of political change, and the process to reach these frontiers. In the eighteenth to twenty-first centuries, the frontier trajectory of political modernization could be divided into two major stages: first political modernization, the transition and profound change from agricultural to political politics, from autocratic to democratic politics, and from familiar to civil politics, featuring mainly democratization, rationalization, institutionalization, bureaucratization, and becoming highly efficient; and second political modernization, the transition and profound change from industrial to knowledge politics, from power politics to service politics, and from physical to ecological politics, currently characterized mainly by knowledgeablization, networking, greening, individuation, diversification, internationalization, etc. The coordinated development of the first and second political modernization is integrated political modernization. There will be new changes in the political modernization in the twenty-second century. Political modernization follows the ten basic principles of modernization (Table 2.15)
Results	The outcomes of political modernization include, among other things, the formation of political modernity, particularity, diversity, and side effects and the profound changes in political participation, national governance, international politics, political environment, etc. The result of the first political modernization is the formation of the first political modernity, particularity, and diversity, with side effects including political corruption, etc.; the main sign of the completion of the first political modernization is the formation of democratic, free, equal, and highly efficient modern politics. The outcome of the second political modernization is the formation of the second political modernity, particularity, and diversity, with side effects including declined political credibility, etc. Currently, the second political modernization is a picture scroll to be thoroughly unfolded
Dynamics	The influencing factors of political modernization include innovation, electioneering, adaptation, conflict, distribution of powers, public participation, international interaction, etc. Dynamic models include innovation drive, two-wheel drive, associative action, four-step hypercycle, composite interaction of three types of politics, innovation diffusion, innovation spillover, competition drive (Table 2.20), etc. Driving forces differ in different countries and at different stages, and driving forces in advanced countries are different from those in developing ones
Models	Political modernization has a diversity of paths and models, which are of starting dependency and path dependency and are subject to traditional politics, national level, and international system. In the twenty-first century, the basic paths are first political modernization, second political modernization, and integrated political modernization, each having a great number of subdivided paths and development models; and there are a variety of democratic models

Note: There has been no unified definition of modern politics. Generally, modern politics includes politics of industrial society (primary modern politics) and politics of knowledge society (advanced modern politics), sometime known as postmodern politics

Source: RGCMs (2010)

Table 6.42 Basic criteria of political modernization

Item	Political change as part of political modernization	Political change not as part of political modernization
Time	From the eighteenth century onward (meeting the criterion of nature at the same time)	Before the eighteenth century
Nature	(Political progress and positive adaptation)	(Political setback and reactive adaptation)
Criterion 1	Conducive to the equalization and rationalization of political participation	Adverse to the equalization and rationalization of political participation
Criterion 2	Conducive to the democratization and increasing efficiency of national governance	Adverse to the democratization and increasing efficiency of state governance
Criterion 3	Conducive to human liberty and overall development	Adverse to human liberty and all-round development

Table 6.43 Three sources of political modernization

Item	Source	Sample
Source 1	Partial succession and development of traditional politics	Territory, sovereignty, international relations, etc.
Source 2	Partial negation and transition of traditional politics	Selective development, transition, etc., of traditional political institutions and concepts
Source 3	Political innovation and exchange	Innovation in political institutions, concepts, process, etc.

Table 6.44 Basic requirements of political modernization

Item	Requirements of the first political modernization	Requirements of the second political modernization
Time	Approx. 1760–1970	Approx. 1970–2100
Political participation	Equalization, legalization, rationalization	Diversification, individuation, internationalization
National governance	Democratization, specialization, increasing efficiency	Service orientation, networking, increasing transparency
International politics	Institutionalization, rationalization, professionalization	Democratization, diversification, ecologicalization
Political environment	Economic and social development, etc.	All-round human development, etc.

requirements of the first political modernization include political democratization, power rationalization, organizational bureaucratization, and facilitation of economic and social development; those of the second political modernization include political diversification, power knowledgeablization, organizational networking, and promotion of all-round human development.

Political development involves political progress and positive adaptation, and political modernization is the intersection of political development, political transition, international political interaction, and the change of international status (Table 6.45).

Table 6.45 Conceptual model of political modernization

Item	Main contents
Hypothesis 1	Political progress means political changes conducive to political participation equalization, national governance democratization, and all-round human development
Hypothesis 2	Political positive adaptation means political adjustment conducive to political participation equalization, national governance democratization, and all-round human development
Hypothesis 3	Political transition means the transition from agricultural to industrial politics and from industrial to knowledge politics
Inference 1	Political development = political progress + political positive adaptation + political progress × political positive adaptation
Inference 2	Political modernization = political development × political transition × international political interaction and the change of international status

(2) Process

Political modernization is a long-standing complex historical process (Table 6.41). The process of political modernization can be divided into two types: frontier process and catch-up process with both common and different features. In the eighteenth to twenty-first centuries, its frontier process can be divided into two stages (Table 6.46), which have different connotations (Fig. 6.18; Table 6.47).

The first political modernization is the transition and profound change from traditional to modern politics and from autocratic to democratic politics, including the transition from feudalism to republic politics, from religionism to secular politics, from familiar politics to civilian politics, from aristocratism to class politics, from autocratic politics to legitimate politics, from agricultural to industrial politics, etc. Its features include political differentiation, democratization, rationalization, bureaucratization, legalization, secularization, institutionalization, systematization, professionalization, popularization, rationality, equalization, liberalization, specialization, division of classes, establishment of political parties, citizenship, emergence of organizations, etc.

The second political modernization is the transition and profound change from modern to postmodern politics and from power politics to service politics, including the transition from national to international politics, from centralized to decentralized politics, from class to public politics, from elite to civilian politics, from material to ecological politics, from physical to networking politics, from simple democracy to consultative democracy, from information control to information disclosure, from industrial to knowledge politics, etc. Currently, its features include knowledgeablization (knowledge-based), diversification, informatization, networking, individuation, greening, ecologicalization, decentralization, growth of political agendas, internationalization, service orientation, marketization, openness, transparency, and self-determination; there will be new developments in the future.

If the first political modernization is said to be the primary political modernization—the transition from traditional to primary modern politics—then the second political modernization is the advanced political modernization, the transition from

Table 6.46 Periodical table of political modernization in broad sense—change of political form

Stage (approx. starting year)	Political change and form (key elements)	Political modernization
<i>Knowledge age</i>	<i>Politics of knowledge society (knowledge politics)</i>	
Transition stage (2050)	Global politics, universal politics	
Mature stage (2020)	Global democracy, greening politics	<i>Second political modernization</i>
Developing stage (1992)	Consultative democracy, networking, diversification, individuation	Diversification, networking, individuation, postmodern politics, knowledge politics
Start stage (1970)	Postmodern politics, ecological politics, new public administration	
<i>Industrial age</i>	<i>Politics of industrial society (industrial politics)</i>	
Transition stage (1946)	Public politics, welfare state, social democracy	
Mature stage (1914)	Democracy state, socialism, fascism	<i>First political modernization</i>
Developing stage (1870)	Democratization, rationalization, civilian government	Democratization, institutionalization, specialization
Start stage (1763)	The Enlightenment, political revolution (USA and France)	Modern politics, industrial politics
<i>Agricultural age</i>	<i>Politics of agricultural society (agricultural politics)</i>	
Transition stage (AD 1500)	Renaissance, religion reformation, parliamentarism	
Mature stage (AD 618)	Caesarism, religionism, aristocratism	
Developing stage (500 BC)	Feudalism, bureaucracy, republicanism	(Agricultural revolution, agricultural politics)
Start stage (3500 BC)	Slavery, autocracy, familiar politics	
<i>Primitive age</i>	<i>Politics of primitive society (primitive politics)</i>	
Transition stage (10,000 years ago)	Farming, private ownership, union of tribes	(Primitive agricultural revolution, slash-and-burn cultivation)
Mature stage (40,000 years ago)	Primitive public ownership, democracy, tribal politics	(Tool-making revolution, primitive politics)
Developing stage (200,000 years ago)	Tool making, division of labor, clanship	
Start stage (2,500,000 years ago)	Stone tool making, colony, colonial politics	

Note: The time of civilization as well as political changes and forms are all based on the description of the temporal trajectory of human civilization frontiers

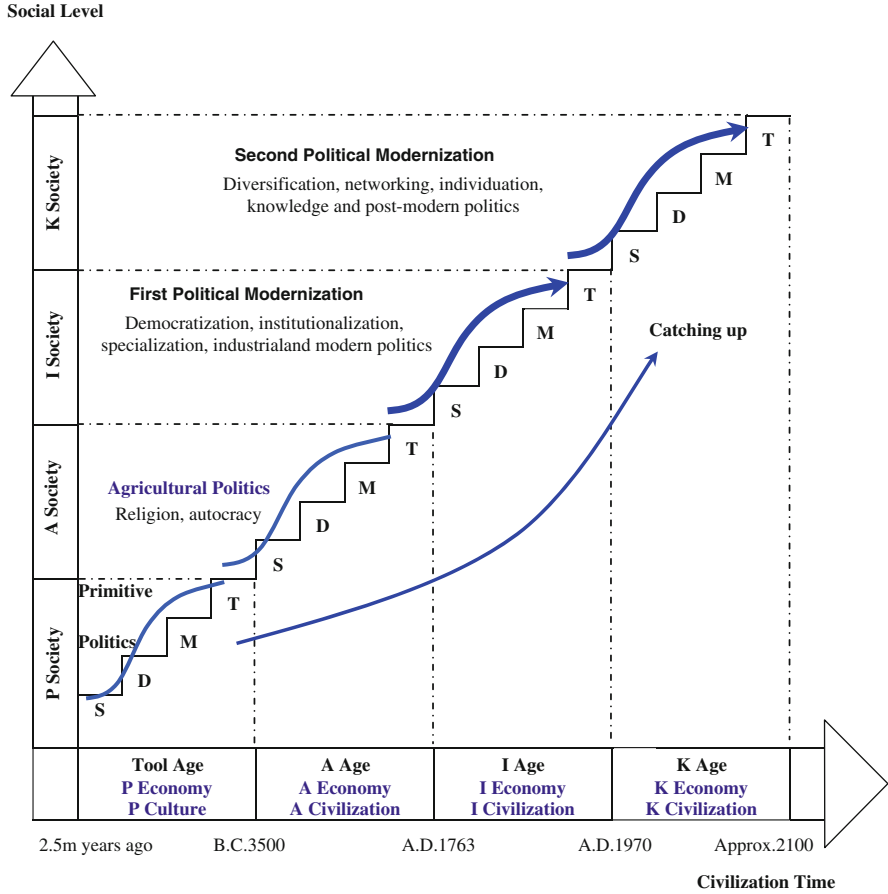


Fig. 6.18 Coordinates of political modernization. Note: P, A, I, and K refer to primitive, agricultural, industrial, and knowledge, respectively. S, D, M, and T refer to the start, developing, mature, and transition phase, respectively. The civilization time was the time based on the track of the forerunner of the civilization

primary to advanced modern politics; the coordinated development of the first and second political modernization is the integrated political modernization. There will be new changes in political modernization in the twenty-second century.

Political modernization has different features in different subfields and political sectors (Table 6.48).

The process of political modernization roughly has 12 features including non-linearity, reversibility, diversity, predictability, path dependency, path diversity, conflict, and being systematic, stage-specific, global, complex, and long-standing.

Political modernization is a manifestation of modernization and follows the ten basic principles of modernization (Table 2.15).

Table 6.47 Two major stages of political modernization in broad sense

Item	First political modernization	Second political modernization
Time	Approx. 1763–1970	About 1970–2100
Political democracy	Parliamentary democracy, mass democracy, social democracy, centralization of power	Decentralization of power, diversification, dialogue-style democracy, tolerance democracy, direct democracy, cyber democracy, consultative democracy
Political conflicts	Conflicts, strikes based on classes and powers, and conflicts between labor and capital	Reduced conflicts based on classes and wealth distribution, and increased conflicts based on ecological and technological risk
Political agendas	Economy, classes, wealth, rights, war, political parties and state	Increased agendas on life, ecology, risk, safety, sexual concepts, civil rights and globe
Form of participation	Political parties, voting, social movements, political organizations	Voters are not concerned with general ballots but with issues they are interested in, networking
Political power	Secular authority, state authority, constitutional power, institutional power	Reduced government authority, decentralization of power, individuation, human liberty
Political nature	National sovereignty, power politics, class politics	Political internationalization, service politics, civilian politics
Political form	Collective, antagonistic, centralized, class-based, violent	Individualized, nonantagonistic, decentralized, nonclass, peaceful

Table 6.48 Characteristics of subfields and sectors of political modernization in broad sense

Item	First political modernization	Second political modernization
Political participation	Democratization, secularization, division of classes, popularization, institutionalization, equalization, liberalization, rationalization	Diversification, consultative democracy, networking, individuation, internationalization, growth of political agendas, decentralization, knowledgeablization
National governance	Democratization, secularization, legalization, centralization, institutionalization, bureaucratization, specialization, standardization, procedure orientation, systematization	Knowledgeablization, informatization, service orientation, internationalization, greening, marketization, decentralization, diversification, increasing openness and transparency
National defense	Military mechanization, standardization, and nationalization	Military informatization, professionalization, and diversification
Diplomacy	Institutionalization, professionalization, normalization	Service orientation, multiplicity, diversification
Political parties	Legalization, normalization, classes-based	Popularization, particularization, multiplicity
Political organizations	Division of classes, specialization, standardization	Growth of political agendas, internationalization, diversification
International politics	Institutionalization, standardization, complication, international wars	Diversification, democratization, equalization, international aid
Political environment	Industrialization, urbanization, marketization, rationalization	Knowledgeablization, informatization, ecologicalization, globalization

Table 6.49 Modernity and side effects of political modernization

Item	First political modernization	Second political modernization
Modernity	First political modernity: democratic, rational, polarized, specialized, professional, organized, secular, liberal, equal, bureaucratic, popular, centralized, systematic, institutional, class-based, political party-based	Second political modernity: politically diverse, knowledge intensive, information intensive, individual, autonomous, networked, decentralized, green, agenda-focused, marketization, service-oriented, international, open, transparent (there still will be new features in the future)
Side effects	Political corruption, class conflict, etc.	Reduced support of government, international political risk, etc.

(3) Results

The outcomes of political modernization have been increasingly relevant to its goals since the 1950s.

They generally include the formation of political modernity, particularity, diversity, and side effects (Table 6.49).

The outcome of the first political modernization is the formation of the first political modernity, particularity, and diversity. It is characteristically democratic, rational, bureaucratic, rule-of-law-based, centralized, secular, specialized, and efficient, and side effects include political corruption, etc.

The outcome of the second political modernization is the formation of the second political modernity, particularity, and diversity. Currently, it is characteristically diverse, individual, green, networked, decentralized, knowledge intensive, information intensive, international, service-oriented, and transparent, and side effects include declined political credibility, etc.

The outcomes of political modernization include six aspects of profound changes such as the completion of two political transitions, the legalization and equalization of political participation, the rationalization and institutionalization of political system and structure, the democratization and rationalization of political institutions and concepts, government administration and public policy becoming increasing scientific and efficient, and the institutionalization and democratization of international politics and international relations. These changes can be seen in the fields of political participation, national governance, and international politics.

From the theoretical perspective, political modernization has mainly three goals: completing the first political modernization, completing the second political modernization, and improving the national capacity for international political interaction.

From the policy perspective, political modernization also has mainly three goals: legalization and equalization of political participation, democratization and increasing efficiency of national governance, and civil rights protection and all-round human development. These goals may also be further specified, and they have very rich connotation.

(4) Dynamics

The analysis of the driving forces of political modernization may be conducted in two dimensions: driving factors and driving mechanisms (Table 6.41).

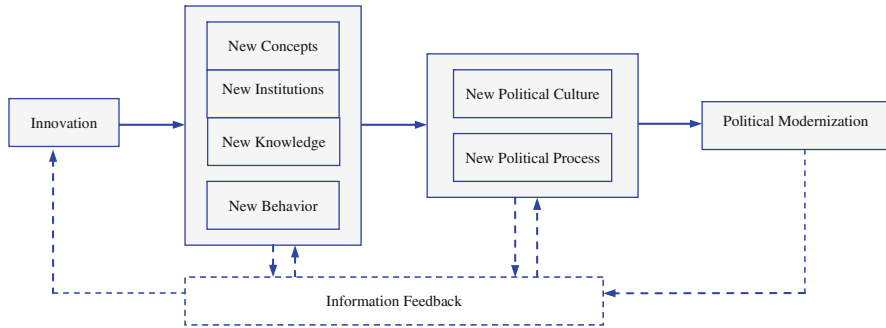


Fig. 6.19 Model of innovation-driven political modernization

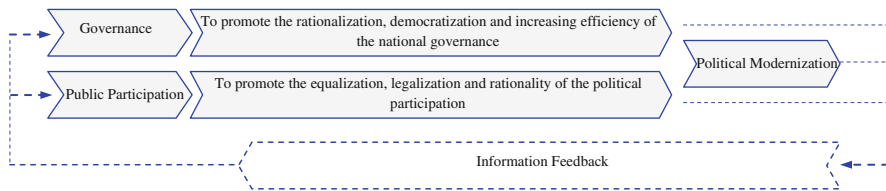


Fig. 6.20 Two-wheel drive model of political modernization

Broadly speaking, innovation is the fundamental source of political modernization; electioneering is the incentive mechanism for political changes; adaptation is the political adjustment to the changes in external environments; conflict (including political crisis and revolution) is the inducing factor of political changes; power distribution is the driving factor of political development; and public participation is the influencing factor of political changes.

The driving models of political modernization include innovation drive (Fig. 6.19), two-wheel drive (Fig. 6.20), associative action, innovation diffusion, innovation spillover (Table 6.41), etc. Driving forces of political modernization differ at different levels, in different countries, and at different stages.

(5) Models of Political Modernization

There are three basic paths (Fig. 6.21) and many subdivided paths for political modernization in the twenty-first century. The three basic paths are second political modernization, first political modernization, and integrated political modernization, for each of which there are many subdivided paths. The sphere of politics embraces four subfields (political participation, national governance, international politics, and political environment), and each subfield or sector has its own modernization path; the three basic paths serve as their “envelope curve.”

Since there are optional paths, political modernization has neither standard nor optimal paths, but only appropriate ones. The selection of appropriate paths is subject not only to political modernization theories but also to such objective factors as countries’ traditional politics, basic conditions, and external environment,

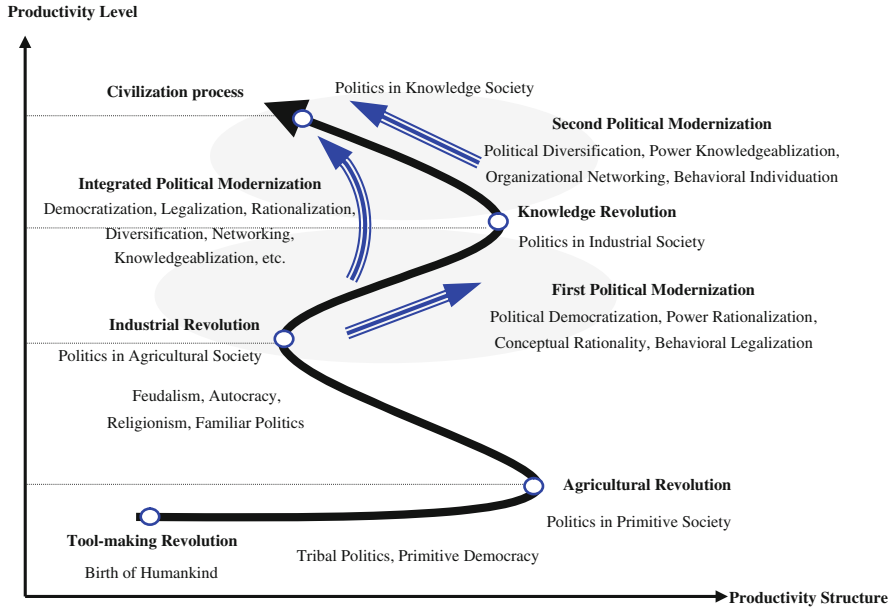


Fig. 6.21 Three basic paths of political modernization in the twenty-first century. Note: if affected by informatization and greening, the first political modernization will take on some new features in the twenty-first century

as well as international political interaction. The fact that paths are optional is relative and conditioned. Path choice has certain path dependency, is closely related to political modernization achievements, and involves rather high risk and opportunity cost. The risk can be effectively reduced by enhancing research on political modernization theories and policies.

There are a great variety of political modernization models. Different countries may, at different stages of political modernization, create different successful or unsuccessful models. Models of the second political modernization path include, among others, cyber democracy + diversification, consultative democracy + ecologicalization, etc. Models of the first political modernization path include democratization first and then industrialization, industrialization first and then democratization, coordinated development of democratization, industrialization, etc. Models of integrated political modernization path include democratization + industrialization + diversification, consultative democracy + industrialization + ecologicalization, etc. These models, of course, are not absolute but only have different focuses.

(6) Integrated Political Modernization

Integrated political modernization is a basic path for political modernization in broad sense in the twenty-first century, and it includes two political transitions in succession (from traditional to modern politics and from modern to postmodern

politics) and the continuous transition toward knowledge politics. It requires the advancement of the first and second political modernization together as well as the simultaneous progressing of the democratization, rationalization, institutionalization, specialization, knowledgeablization, networking, diversification, greening, etc. It is an organic synthesis of the first and second political modernization, a new path of political modernization. Since different developing countries start and finish political modernization at different time, there is not just one path but a set of paths for integrated political modernization.

6.4 Cultural Modernization

Cultural modernization is the modernization of cultural sphere, and an expression of the modernization phenomenon in the cultural field. It includes the staged and stratified cultural modernization, and modernization of subfields and sectors of culture (Fig. 6.22). Culture has two properties: of nationality (cultural identity) and of commodity (cultural commodity). The cultural modernization is drove by both state interests and market demands.

6.4.1 Studies

Cultural modernization study, a part of the modernization study, refers to the modernization study of cultural sphere. Starting from the early years of eighteenth century, cultural modernization study can be analyzed from the perspectives of the historical process, the present and the future.

There are no agreed definitions about the culture and the cultural sphere. Generally, culture refers to the complex of knowledge, institution, and ideas that can impact and explain human lifestyles; and its extension includes pure culture, cultural industries, cultural facility, and other cultures (Fig. 6.23). The cultural

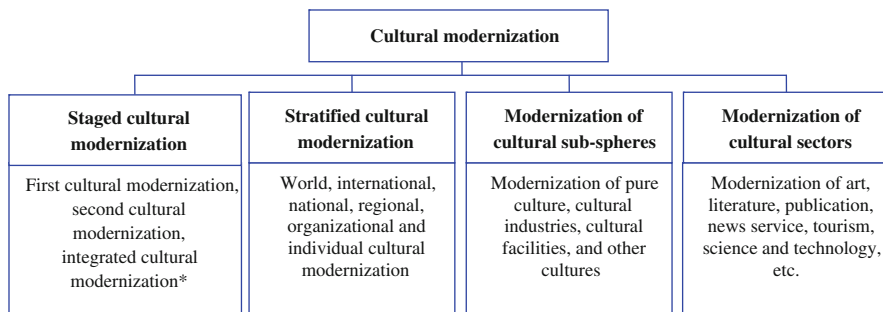


Fig. 6.22 Objects of cultural modernization study. Note: (*Asterisk*) Integrated cultural modernization means a coordinated development of twice cultural modernizations, which is a basic path of cultural modernization in developing countries

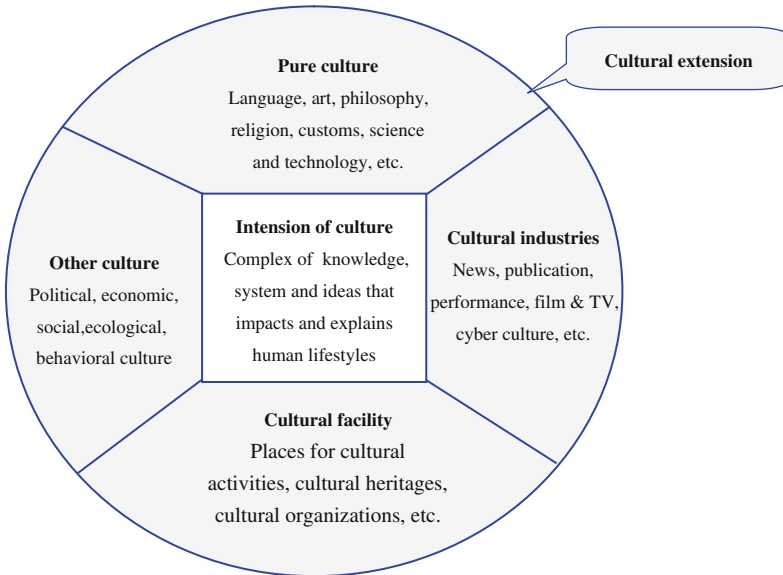


Fig. 6.23 Operational definitions of cultural intension and extension

sphere includes fields related to the creation, production, dissemination, distribution, provision, conservation, and consumption of cultures. Cultural modernization is a short form of the modernization of cultural field and has many overlapping aspects with the modernization of economy, society, politics, ecology, and individual.

6.4.1.1 Research Paradigm

The objects of cultural modernization study are the modernization of cultural field, including the modernization of pure culture, cultural industries, cultural facilities, and other cultures, and modernization of the world, national, regional, organizational, and individual cultures. The research contents include the modernization of cultural behavior, structure, institution, and ideas, as well as the process, result, dynamics, and model of the cultural modernization. All these factors can form a matrix (Table 6.50). This study also covers the staged cultural modernization, the modernization of cultural sectors, etc.

As an aspect of the modernization study, cultural modernization study can follow the methodology of modernization study. Analysis approaches are diverse, such as time-series analysis, cross-sectional analysis, process analysis, cultural investigation, case study, and coordinate analysis. Cultural modernization study can involve the whole process or a specific stage in terms of time span, and also can involve the world, a country, or region, in terms of the research scope.

Table 6.50 Matrix of cultural modernization study

Content		Object		
		Cultural sphere	Pure culture, cultural industries, cultural facility, and other cultures	Culture at six levels including the world level
		Cultural modernization	Modernization of four cultural subspheres	Cultural modernization at six levels
Element	Behavior	Modernization of cultural behavior, structure, institution, and ideas	Modernization of cultural behavior, structure, institution, and ideas in the four cultural subspheres	Modernization of cultural behavior, structure, institution, and ideas at the six levels
	Structure			
	Institution			
	Idea			
Aspect	Process	Process, result, dynamics, and model of the cultural modernization	Process, result, dynamics, and model of cultural modernization in the four cultural subspheres	Process, result, dynamics, and model of cultural modernization at the six levels
	Result			
	Dynamics			
	Model			

Note: Pure culture covers language, art, philosophy, religion, law, ethics, customs, science and technology, etc.; cultural industries include news, publication, performance, radio and TV, film, design, advertising, entertainment, tourism, works of art, conference and exhibition, sports, cyber-culture, cultural goods, cultural trade, etc.; cultural facilities include places for cultural activities, cultural heritages, cultural organizations, etc.; other cultures refer to overlapping aspects between the cultural sphere and other sphere, including culture of economy, society, politics, environment, and individual behavior. The six levels refer to global, international, national, regional, organizational, and individual level. Besides, the cultural modernization research also involves in staged cultural modernization, modernization of cultural sectors, frontal analysis, analysis of cultural trends, elements of cultural modernization, interaction between different fields, etc.

Source: RGCMS (2009)

6.4.1.2 Historical Facts

As a form of cultural transformation, cultural modernization started in the eighteenth century. Generally, it is closely linked to economic and social modernization. The economic and social circles have undergone two stages of modernization and six waves, so has the cultural community (Table 6.51). *China Modernization Report 2009: Cultural Modernization Study* (RGCMS 2009) has made systematical analysis about the process, facts, experience, and inspiration of the cultural modernization as follows.

(1) Process Analysis

The first wave of cultural modernization came during the First Industrial Revolution (1763–1870), mainly in European and American countries. It focused on freeing people’s mind, eradicating superstition, spreading scientific knowledge and advocating humanistic spirit, and realizing the independence of the cultural domain. It has made significant progress in the following aspects: first, promoting the scientific revolution and spreading knowledge, such as three major discoveries in natural science, namely, the cell theory, law of conservation and conversion of energy, and Darwin’s theory of evolution, France’s *Encyclopedia* (1751–1772);

Table 6.51 Two stages and six waves during the cultural modernization

Wave	Approx. time	Content	Annotation
First	1763–1870	The Enlightenment, cultural specialization, newspaper	<i>First cultural modernization</i> Specialization, secularization, rationalization, being scientific, commercialization, modern culture, industrial culture
Second	1870–1945	Industrial cultural, commercialization of culture, movie	
Third	1946–1970	Mass media, consumer culture, color TV	
Fourth	1970–2020	Cyberculture, ecological culture, digital multimedia	<i>Second cultural modernization</i> Industrialization, ecologization, diversification, humanization, globalization, postmodern culture, cyberculture
Fifth	2020–2050	Bionic culture, natural culture, democratization of culture	
Sixth	2050–2100	Global culture, universal culture	

Note: The fifth and sixth waves are just “scientific hypotheses”

Source: RGCMS (2009)

second, mind emancipation and institutional innovation, such as the *Declaration of Independence* (1776), *Declaration of the Rights of Man and of the Citizen* (1789), *France’s Civil Code* (1804), and the patent institution; third, the prosperity of literature and art, including the development of classical music, romantic music, Rococo architectures, romantic literatures, and critical realism; fourth, freedom of faith and the prosperity of philosophy, represented by a large number of great ideologists, such as Voltaire, Rousseau, Adam Smith, Kant, and Marx; fifth, the independence of culture and vigorous development of press, publication, and performance; and sixth, the rising of urban culture.

The second wave occurred during the Second Industrial Revolution (1870–1913) and the two World Wars (1914–1945) and has made remarkable achievements in the following aspects: first, the technological revolution, such as electromagnetic theory, quantum mechanics, the theory of relativity, bicycle, electric generator, automobile, and air plane; second, the innovation in communications and cultural facilities, such as telephone, camera, gramophone, radio, radio receiver, recorder, movie, and TV; third, the development of modern literature and art, for example, realistic literature, modernist literature, modern fine arts, music, and dance; fourth, the development of modern philosophy, including philosophy of science and humanism philosophy, such as analytic philosophy, logical positivism, voluntarism, life philosophy, phenomenology, existentialism, psychological analytic, and Western Marxism; fifth, the commercialization of culture and the commercial production of film and pop music; and sixth, the booming of leisure culture and increasing popularity of sports and vacation tourism (Stearns et al. 1992).

The third wave was during the Third Industrial Revolution (1946–1970) and has made remarkable process, despite its short duration, including: first, technological revolution, such as atomic energy, automation, electronic technique, biological technology, satellite technology, and space technology; second, innovation of cultural facilities, such as transistor radio; third, development of modern literature and art, such as existentialism literature, absurd theater, black humor fictions,

avant-garde music, and cinematographic art; fourth, the development of modern philosophy and ideology, such as modernism, structuralism, falsificationism, logical pragmatism, and scientific paradigm theory; fifth, the booming of mass media and consumer culture, embodied by the fact that a great deal of information was conveyed to the public through newspaper, radio, TV, and films, and TV, film, and pop music became the core of industrial culture; and sixth, the modern science and technology had increasing social influence and scientific culture developed rapidly.

The fourth wave occurred concurrently with the fourth wave of economic and social modernization (1970–2020) and was driven by the knowledge and information revolution. It has made achievements in about six aspects: first, high-tech revolution, such as information technology, biotechnology, materials technology, nanotechnology, and space technology; second, cultural innovation and cyber-culture such as online games, cyber literature, online media, and cyber legalization, and eco-culture such as environmental protection campaign, ecological awareness and environmental law, and cultural diversification; third, postmodernist culture, such as postmodernist literature, art and architectures, postmodernism, feminism, ethics in cyberspace, and information philosophy; fourth, the rising of cultural industries and cultural trade and significantly increasing value added and much higher contribution to employment; fifth, the innovation in cultural systems and policies, diversification of cultural organizations and support, democratization of culture, cultural diversity, and protection of cultural heritages; and sixth, cultural has taken the dominant place, and cultural completion and consuming become a hot issue on the international arena.

The fifth wave of cultural modernization is expected to occur during 2020–2050, mainly featuring the bionic culture and natural culture. Thanks to the development of new biology and high technology; biology, information, and nanotechnology tend to be integrated, generating bioengineering technologies that can improve and manipulate life functions, enabling the controllability of the life span of living beings and the dominance of bioeconomy, and bringing radical changes to people's ideas. Information can be transmitted between human brains and computers through transcribers, free accessibility of knowledge and information become real, bionic men can be seen in both your houses and offices, and bionic culture and natural culture can be supportive to each other. To some degree, "bionic man" is the upgraded robot, featuring a humanized body (appearance of human being), humanized emotion (human being's emotion), and humanized capability (functions of human being). Its entry into people's families will trigger the fourth revolution in people's families. The first revolution of this kind is the appearance of small and nuclear families, the second is the mechanization and electrification of families, the third is the use of information and Internet in families, and the fourth is the entry of bionic men into and the diversification of families which will completely change the structure and function of the family.

The sixth wave is expected to emerge between 2050 and 2100, mainly featuring the global culture and universal culture. Based on the new revolution in physics and along with the development of high technologies and new energy, man's manufacturing and transportation technologies will undergo radical change,

so will people's ideas about time and space; super-manufacturing systems will replace man's physical and manual work, super-transportation system will send people to wherever they want to go, and cultural activities and emotional experiences will play a dominant role in social economy; common view might be formed in the global culture, and the universal culture may become the way of life for some people.

(2) Cultural Modernization in Three Subfields

Cultural modernization involves pure culture, cultural facilities, and cultural industries (Table 6.52).

(3) Cultural Modernization and Evolution of Cultural Institutions

Cultural modernization includes the change of the cultural institution (Table 6.53). Generally, the basic cultural system is about the ownership, allocation, and distribution of cultural resources. In the primitive society, it is the primitive religious institution, and all cultural resources are owned and shared by all members of the society. In the agricultural society, it refers to the cultural control institution, under which the feudal court and religious organizations determine the production, allocation, and distribution of cultural resources and control folk culture. In the industrial society, it takes the form of cultural censorship, cultural market, and the intellectual property institution; and the production, allocation, and distribution of

Table 6.52 Three subfields of cultural modernization

Approx. time	Pure culture	Cultural facilities	Cultural industries
1763–1870	S&T revolution, the Enlightenment, emancipation of the mind, urban culture, etc.	Library, museum, theater, salon, etc.	Newspaper, books, periodicals, art, performance, etc.
1870–1945	S&T revolution, industrial culture, modern philosophy, leisure culture, etc.	Telephone, gramophone, radio receiver, camera, film, television, etc.	Press, publication, performance, broadcast, film, pop music, etc.
1946–1970	S&T revolution, modernism, consumer culture, scientific culture, etc.	Transistor radio, cultural heritage, etc.	Television industry, international tourism, cultural service, cultural trade, etc.
1970–2020	Cyberculture, ecological culture, postmodernist culture, cultural diversity, technical revolution, etc.	Internet, cell phone, digital cultural facilities, etc.	Online game, digital media, information revolution, etc.
2020–2050	Bionic culture, natural culture, S&T revolution, etc.	Transcriber between people and computer, etc.	E-emulation of people, etc.
2050–2100	Global culture, universal culture, S&T revolution, etc.	Spatial cultural facilities, etc.	Spatial experience, etc.

Note: S&T refers to the science and technology

Source: RGCMS (2009)

Table 6.53 Timing sequence change of basic cultural institution (specific features)

Stage	Primitive society	Agricultural society	Industrial society	Knowledge society
Historical time	Birth of mankind 3500 BC	3500 BC–AD 1763	About 1763–1970	About 1970–2100
Cultural type	Primitive culture	Agricultural culture	Industrial culture	Knowledge culture
Basic institution	Primitive religion	Cultural control	Cultural censorship and market	Internet-based and international
Language	Natural language	National and religious language	Official and nonofficial languages	Cyber language, protection of language
Literature	Oral literature	Religious literature, literature control	Publication censorship, specialization	Online literature, protection of literature
Art	Primitive art	Religious, court and folk art	Publication censorship, commercialization	Online art, protection of art
Religious	Primitive religion	Ethnic, national and folk religions	Differentiation and secularization of religion	Diversification and the folk style
Legal	Primitive customs	Ancient and classic laws	Legal institution, intellectual property	Law about the Internet and ecology
Morals	Primitive customs	Religious and feudal morals and rule by divine right	Industrial and market morals and privilege	Internet-based, diversified, human rights
Technological	Primitive tool	Individual behavior, technological organizations	Technological institution, specialization	Innovative institution, internationalization
Cultural facilities	Religious facilities	Governmental and nongovernmental cultural facilities	Cultural institution, specialization	Digital and international
Cultural industries	–	Governmental and nongovernmental cultural activities	Popular culture, market-based	Internet-based, globalization

Source: RGCMS (2009)

cultural resources are determined by both the government and the market. The knowledge society adopts an institution featuring networking (the wide use of Internet), ecologization, and internationalization, and its unique way of production, allocation, and distributing the cultural resource is taking shape.

(4) Facts of Cultural Modernization

The first is the facts in the field of pure culture. Since the eighteenth century, the language has undergone constant development from the classic to the modern then to the postmodern, with its types reducing; the adult literacy rates have increased and amounted to 100% in some countries, different schools of literature appeared in different periods, including classic, romantic, realistic, modernist, and

postmodernist literature, so did the art (including classic, romantic, modernist, and postmodernist art) and philosophy (including classic, modernist, and postmodernist philosophy); religions have always been there and become diversified and tended to be secularized in some countries; science and technologies developed rapidly through several technological revolutions. Besides, green culture and Internet culture have prospered since the 1970s.

The second is the facts in the field of cultural facilities. Since the eighteenth century, places for cultural activities and cultural organizations become more diverse, and their numbers have increased. Since the nineteenth century, more diverse cultural facilities have been applied with the popularization rate being increased, and the information facilities were in the same case; the types of sports and entertainment facilities have been increased, and tourism, educational, and technological facilities have constantly developed. Since the twentieth century, the protection of natural and cultural heritages has been intensified.

The third is the facts related to the cultural industries. Since the eighteenth century, the circulation of newspaper of the world has increased, while that for developed countries has increased but then dropped. From the beginning of the nineteenth century, the amount of publications has grown at an annual approx. rate of 2%, the coverage of broadcast has been expanded, the quantity of movies produced has also risen, and leisure and entertainment industries have constantly developed. In the twentieth century, more people can spend more time watching TV, new media industry and online games have rapidly developed in the latter half of the century, and the value added and employment in the cultural industries and the cultural trade also have seen growth.

The fourth is the facts about political and economic culture. Since the eighteenth century, democratic culture and democratization have moved forward, and governments have made significant strides in being information-based in the latter half of the twentieth century. Since the nineteenth century, the working hours per week have been dropped while free time increased; the number and proportion of child labors have been both dropped; distribution in developed countries have become more fair, and the international difference in consumer culture has been obvious; the proportion of industrial labors in developed countries has been increased but then dropped; and the modern corporate culture is developing.

The fifth is the facts in social and individual culture. Since the start of the eighteenth century, the population growth rates in developed countries have increased but then dropped, the education enrollment and the proportion of people who received higher education have been increased, and the proportion of people receiving middle-level education in developed countries has been increased and then dropped. In the nineteenth century, the coverage of social insurance has been expanded with more expenditure on social welfare, families become smaller in some countries, and the total fertility rate was lower. In the twentieth century, more women tended to take measures on birth control, and the divorce rate increased while the marriage rate decreased; the smoking prevalence has increased but then dropped in some countries.

The sixth is about facts related to ecological and international culture. Since the nineteenth century, the number and proportion of coverage of national protection areas have been increased, and environmental protection has been better supported, and the recycling of wastes has been bettered in the twentieth century. The nineteenth century witnessed the increasing number of international organizations and conferences, more prosperous international tourism and more frequent sports exchanges, and the growing number of people studying abroad, while the twentieth century saw more translated books and immigrants.

The seventh is about the cultural policies. Since the eighteenth century, the cultural field has become more democratic, and intellectual property right has been better protected. In the nineteenth century, cultural investment became diverse, and some governments spent more on culture; scientific culture and human culture were separate, with the former playing a bigger role. In the twentieth century, more countries have ratified international cultural treaties, protection of the world's tangible and intangible cultural heritages and the international cultural cooperation have both been intensified; various cultural policies have been made to protect the cultural diversity, and cultural freedom has been respected more and more.

Finally are the comprehensive facts about cultural modernization. Cultural life and content have constantly changed, so have the cultural institution and ideas since the eighteenth century. Such changes are not linear, but in a diverse way and through various channels. Some traditional culture has been inherited. The cultural competitiveness and influence of specific countries varied since the nineteenth century. The proportions of the value added and employment in the cultural industries have surpassed those of the agriculture in particular countries at the end of the twentieth century (Table 6.54).

(5) Historical Experience

First of all, cultural modernization is both of a trend and a choice. Cultural modernization is historically inevitable to human culture and represents the dominant direction of human cultural development, as well as is a choice of different countries and nations. As the right to make cultural choices is a fundamental one for

Table 6.54 Cultural industries surpassing agriculture in size in some developed countries

Country	Proportion of value added of the cultural industries in GDP (%)	Proportion of employment in the cultural industries (%)	Proportion of value added of agriculture in GDP (%)	Proportion of employment in agriculture (%)
USA	6.6	4	1.2	2.5
Germany	3.4	–	1.0	2.5
UK	3.8	4.3	1.0	1.2
France	3.1	3.2	1.6	2.5
Canada	3.5	4.1	2.2	2.8
Australia	3.3	5.1	3.4	4.0

Note: Some data of this table are the data of available between 1999 and 2004, and the definitions and statistical standards for the cultural industries vary in different countries

Source: RGCMS (2009)

the mankind, all nations and countries enjoy such a right under the condition that their choices cannot affect others in a bad way. Those choice makers will make efforts to promote the cultural modernization, while those who do not make this choice otherwise will keep or stay in their original culture, traditional culture, or the stage of primitive culture, and thus, the cultural forefronts of different countries will vary more. All nations and countries shall be responsible for what they choose.

Second, cultural modernization involves the interest of the state and the market competition. Culture has two properties. (a) It has national identity and can represent the cultural rights of a nation or a country as its cultural identity. (b) It might be a commodity and can be produced and traded and make profits according to the market demand. The evolution of culture is affected by both national interest and the market demand. Such duality can undoubtedly cause the duality of cultural modernization that is manifested in the demands to maintain the state's cultural rights and creativity and to enhance the quality of cultural life and the cultural competitiveness. In most cases, these demands are consistent. The national interest and the market demand are also two driving forces in the process of cultural modernization. Different countries deal with the duality of cultural modernization in different ways, with some focusing on the countries' cultural rights while others stress the property of culture as a commodity.

Third, cultural modernization is highly diverse but is convergent as well. Its diversity is mainly manifested in (a) cultural modernization has different features in different countries and fields; (b) the international culture is diverse; (c) the national cultures of many countries, including some developed countries, are diverse; and (d) cultural activities are in various ways. Its convergence is reflected in (a) cultural facilities, cultural industries, science and technologies, economic culture, and ecological culture of different countries are convergent to some degree; (b) the quality of cultural life is constringent or convergent to some degree; (c) international culture and international institutions are convergent; and (d) industrial culture, urban culture, and Internet culture tend to have something in common to some degree. Despite such diversity, cultural modernization observes the general law.

Fourth, cultural modernization plays a guiding role in some content. (a) The cultural modernization started earlier than the modernization of the world. Generally, it can be dated back to the Renaissance, religious reform, scientific revolution, and the Enlightenment. The Enlightenment marked the start of the cultural modernization and was the prelude of the modernization of Europe and even the world, while the world's modernization started with the industrial revolution that broke out in Britain. (b) According to the experience of developed countries, mind emancipation was prior to modernization. For example, scientific revolution and the Enlightenment were antecedent to Britain's industrial revolution and the revolution in America and France. (c) In developing countries, economic development and social progress can advance the cultural modernization.

Fifth, cultural innovation is the essential driving force for the cultural modernization. In human cultural frontier, cultural modernization is more a process of natural evolution; however, this process is not the same as the autorotation of

celestial bodies but is driven by innovation and the spread of the innovation. Every revolutionary step forward in the cultural modernization results from major innovation and the spread of such innovation.

Sixth, cultural modernization is diverse, rather than in a single form. It can be rapid or, comparatively, slow; it may proceed through revolutionary changes or in a progressive way; or it can be quiet or a dynamic and influence social movement. The Great French Revolution breaking out in the eighteenth century and the cultural campaign triggered by the student movement in Europe and America in the 1960s were revolutionary; the change of environmental cultural caused by the environmental campaign in the 1970s was more like a social movement; and the emerge of cyberculture initiated by the information revolution in the 1980s–1990s is also revolutionary, although it is not in a violent form, but a peaceful and explosive informatization.

Seventh, the linear way of thinking is not suitable for the research of cultural modernization, as the cultural modernization is multidimensional and complicated, and has different features in different fields. Some changes are nonlinear, such as the change of cultural institutions and ideas, including the transition from traditional to modern culture and then from modern to postmodern culture, and the transformation of material to ecological culture; while some others are linear instead, such as the development of science and technology, knowledge, cultural facilities, and culture industry. Cultural modernization can be reversible under specific conditions, so unidirectional and rigid way of thinking is not advisable for the progress of cultural modernization.

Eighth, cultural modernization cannot be advanced in a blind way, as it is not isolated, but an international cultural interaction, including international cooperation, exchange, completion, and conflicts in the cultural field. There is no such a nation who learns nothing from other countries in its cultural modernization, and not such a national either who refuses international cultural exchange and cooperation. The cultural competitiveness and influence of different countries vary, with developed countries being more advantageous in competitions.

Ninth, there is no best model for the cultural modernization, but successful experience can be drawn as reference; instead, there are only rational choice and path dependence. Cultural modernization in different countries and fields is the same essentially and diverse in forms; its objectives are identical but may be realized in different ways; the requirements for cultural modernization are the same, but may be in various patterns. Given the difference in the languages, art, philosophies, religions, laws, cultural systems, and cultural traditions of different countries, their cultural policies and choices to be made differ a lot and should not be copied blindly. Later-coming ones can learn a lot of good experience from the early birds.

Tenth, simple comparison of the degree of cultural modernization is not reasonable between different countries and between different historical stages. The international comparison in this regard can only be confined in a specific scope, such as cultural activities, cultural facilities, and the cultural industries. Cultural modernization includes the changes of language, art, literature, philosophy, and religion,

and it is not easy to make the transnational or historical comparison for the identification of their development level.

Eleventh, cultural modernization does not mean to completely deny and reject the traditional culture, to cut off the connections between traditional and modern, or an indiscriminate development of traditional culture; instead, it means to inherit and carry forward the “good part” of the traditional culture, deny and transform the “bad part,” and also properly protect and effectively use the traditional culture. During the course of cultural modernization, traditional culture always remains and plays a role. For example, classic science, philosophy, art and literature, religion, language as well as the world cultural heritages are still significant contents in the textbooks of schools at various levels; and classic art and literature and common cultural heritage and intangible cultural heritage are also important resources for the cultural industries.

Twelfth, cultural modernization is to properly protect and use cultural heritages, rather than damage them. During the course of cultural modernization, people become increasingly aware about the role of cultural heritages. They are important as significant element in the cultural identity of a nation, source for cultural innovation and cultural industries, integral part of cultural diversity, and element of the cultural competitiveness and influence. The cultural globalization is not to weaken the role of cultural heritages, but to highlight their international significance. The proper protection and effective utilization of cultural heritages make an organic and irreplaceable part of the cultural modernization.

Thirteenth, cultural modernization may change in five ways: (a) Cultural centralization refers to the phenomenon that the central status of advantageous culture has been consolidated and strengthened, allowing the cultural diversity at the same time. (b) Cultural marginalization means the social status, and international influence of some cultures is declining. (c) Some parts of the culture are protected as cultural heritages due to the loss of social functions. (d) Some parts of culture disappear since they are not inherited, recorded, or protected. (e) Cultural commercialization indicates phenomena that cultural carriers and elements are commercially developed and operated. These five changes lead to the restructuring of the world’s cultural system and the variation of international competitiveness and influence of specific cultures.

Fourteenth, the cultural competitiveness has gradually become a nation’s core competitiveness. Generally, cultural modernization has two stages, namely, differentiation and dedifferentiation. The former means that culture is separated from the whole of the society and becomes an independent field like politics and economy. Its independence and autonomy is mainly manifested in cultural specialization and professionalization. The latter indicates high combination between culture and society and between culture and economy. Culture wins its independence through differentiation, and its influence penetrates into all aspects of the society by dedifferentiation. From this point of view, cultural competitiveness has become a core competitiveness of a country.

(6) Key Enlightenment

First, cultural modernization is an objective phenomenon. Despite dispute, cultural modernization is as real as we can see. In the history of modern culture, there is cultural inheritance, progress, adaptation, transformation, and interaction, and also innovation, communication, choice, loss, and planning. All these are closely related to modernization and are modernization phenomena in the cultural field.

Second, cultural modernization is partially predictable. According to Inglehart and Welzel, *the direction of modernization is predictable rather than determined. Modernization can be affected by many factors including economic and social ones. Economic development and social progress can make people more secular, tolerant and credible and pay more attention to self expression, participation and the quality of their life* (Inglehart and Welzel 2005). All these ideas are applicable to cultural modernization. For example, major scientific discoveries and new technologies can undoubtedly cause cultural change, so can the economic and social progress, international cultural cooperation and exchange, as well as the popularization of education and the development of information technology.

Third, cultural modernization is nonlinear, according to Inglehart and Welzel. *Industrialization leads to bureaucratization and secularization in the cultural change; postindustrialization pushed the cultural change into a new direction: to intensify individual autonomy and stress the value of self-expression, rather than be completely rational, centralized and bureaucratic. Industrialization leads to the transformation from traditional value to more secular and rational one; while postindustrialization leads the transformation from the value of survival to the value of self expression, the later of which stresses people’s choice, autonomy and creativity* (Inglehart and Welzel 2005). The cultural modernization of developed countries has made two turns. The first turn is from traditional (feudal, autocratic, and religious) to modern culture (civic, democratic, and secular), and the second is from modern (productive, economic, and rational) to postmodern culture (service-oriented, ecologically friendly, and people-centered) (Fig. 6.24).

Fourth, cultural modernization is partially reversible, according to Inglehart and Welzel. *Social and economic development and economic collapse which failed to be recovered in a short term may reverse the cultural modernization. For example, many countries founded after the disintegration of Soviet Union in 1990 suffered from cultural reversion* (Inglehart and Welzel 2005).

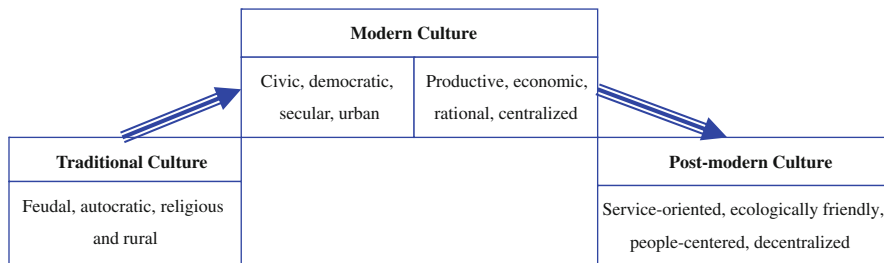


Fig. 6.24 Two turns of cultural modernization in developed countries. Source: RGCMS (2009)

Fifth, according to Inglehart and Welzel, cultural modernization is of path dependency. *Countries observing Protestantism, Catholics, Islam and Confucianism have totally different cultural value systems, and all of them are dynamic and vigorous. Although significantly driven by modernization, value systems of different countries develop in the same direction, they will by no means become the same* (Inglehart and Welzel 2005). Cultural modernization is affected by their traditional culture.

Sixth, cultural modernization enjoys diverse channels. Modernization occurs in pure culture, cultural facilities, cultural industries, and other cultures, as well as subfields of culture; and also takes place at different levels, such as world, international, national, regional, organizational, and individual levels. Obviously, cultural change differs in different fields and subfields and has different features at specific levels. Therefore, cultural modernization is through diverse channels, rather than a single one.

Seventh, the pluralism of cultural modernization is determined by the cultural diversity and the multipaths of cultural modernization. Culture diversity does exist not only worldwide but also in specific countries or regions, even in some transitional organizations, such as multinationals. At present, there are at least over 5,000 languages and more than 5,000 cultures. Diverse countries, regions, organizations, and individuals will by all means have diverse cultural modernization.

Eighth, cultural modernization is a complicated process. During the modernization, traditional culture keeps playing a role, rather than simply vanishes; and global cultures do not become totally the same (Inglehart and Welzel 2005). That means cultural modernization is a composite process during which traditional culture plays its role, modern culture keeps developing, cultural exchanges occur in the international arena, etc. Cultural modernization can also cause social tension, cultural conflicts, and psychological stress, so it is a risky and complex process.

Ninth, cultural modernization is a global trend and campaign. In the past three decades, it first took place in Europe, then spread to most countries and regions in the world. In the century to come, it will sweep the whole globe.

Tenth, cultural modernization will take long time, as it is a kind of cultural evolution rather than a cultural revolution, although it may cause revolutionary change; and even cultural revolution do occur, it does not last long, for example, the Great French Revolution. Generally, cultural modernization cannot be accomplished in an action.

Eleventh, cultural modernization is a systematic process with or without design. It includes the modernization of cultural activities, content, system, and ideas and the modernization of pure culture, cultural facilities, cultural industries, and other aspects of the culture. It is not isolated but international and interactive. The international cultural exchange and cooperation is an important driving force and channel to promote the cultural modernization.

Twelfth, cultural modernization advances through stages. During the 400 years between the eighteenth and the twenty-first centuries, the process can be divided into two major stages and six waves. The first stage features rationality, commercialization, secularization, and cultural differentiation, and the second one has such

characteristics as being Internet-based and ecologically friendly as well as industrialization and cultural dedifferentiation at present.

6.4.2 Theories

Cultural modernization theory deals with phenomena of cultural modernization and is a branch of the modernization theory. It generally includes four categories of theories: classic cultural modernization theory, cultural modernization theory in the broad sense, theories on diverse modernity, and other modernization theories. This part focuses on the first two categories, and other categories are discussed in Chap. 4.

6.4.2.1 Classic Cultural Modernization Theories

Classic cultural modernization theory is an important part of the classic modernization theory. Up to date, academic literatures about cultural modernization are quite abundant, but systematic and agreed general theoretical elaboration about classic cultural modernization theory is lacked. Generally, classic cultural modernization theory has two sources: researches and explanations of cultural modernization by experts on culture, and those by modernization scholars in noncultural fields (such as history and sociology). Through combination of their research subjects and relevant ideas, the structure (Table 6.55) and general theory (Table 6.56) of classic cultural modernization theory can be established.

(1) Definition

There is no uniform definition about the classic cultural modernization. Generally, it refers to the transition from traditional to modern culture, from agricultural to industrial culture, and from religious to secular culture in the course of classic modernization.

Lash (1990), a British scholar, holds that *if modernization is regarded as a process of cultural differentiation, postmodernization is a process of dedifferentiation. The cultural modernization has undergone three stages: the primitive stage,*

Table 6.55 Structure of classic cultural modernization theory

Category	Theory	Main content
General theory	Core theory	Definition, process, result, dynamics, and model of classic cultural modernization
Branch theories	Cultural modernity theory	Definition and model of cultural modernity
	Modernization of cultural sectors	Technological modernization, publication modernization, leisure modernization, etc.
Related theories	Culture theories	Cultural study, contemporary culture study, culture change, cultural transformation, evolution and anthropology, etc.
	Relevant theories	Classic modernization theory, multiple modernities theory, second modernization theory, etc.

Note: Cultural modernization research includes studies on its concepts, empirical studies, and policy studies, and its findings have enriched the cultural modernization theories

Source: RGCMS (2009)

Table 6.56 General theory of classic cultural modernization

Aspect	Basic content
Definition	Classic cultural modernization refers the culture change in the course of classic modernization, and the transition from traditional to modern culture, from agricultural to industrial culture
Process	Classic cultural modernization is a historical process including cultural differentiation, rationalization, secularization, individualization, globalization, etc.
Outcome	The formation and spread of classic cultural modernity, and its features are generalized as classic cultural modernity, including democracy, differentiation, professionalism, secularization, rationality, popularity, etc.
Dynamics	Classic cultural modernization is affected by many factors, such as economy, society, politics, science and technology, international relations, etc.
Model	Classic cultural modernization proceeds through diverse ways and under various models, features path dependence and can be affected by historical factors and objective conditions

Source: RGCMS (2009)

religious and metaphysical stage and the modern stage. In the primitive society, culture and society did not separate from each other, and religion and religious rites made parts of the society. In the second stage, culture was separated from society; during the renaissance, secular culture became independent from religious culture; and in the eighteenth century, divides among theory, ethics and esthetics went further. Cultural differentiation and autonomy leads to the booming of realism of art and epistemology. In the modern stage, further differentiation and autonomy generates cultural modernity, and theories, ethics and esthetics in each cultural field are highly autonomic. The postmodern stage is a process of cultural dedifferentiation.

According to Nielsen (1993), a Danish scholar, *cultural modernization is a process and a process of individualization in nature; and it is also a new cultural structural state, featuring the breakup of limitations in traditional culture; differentiation of social practices into different autonomous fields, rationalization of behaviors and freedom of individuals.*

In the idea of Irgang (2007), a German scholar, *modernization has three dimensions. The first is the modern times and art modernization, which is about the way and significance of art, and is progressive and leads to postmodern discussion. Second, the modernization of art is different from that in other fields. The modern times are a period of enlightenment, during which philosophy and religion was separated. This dimension is about the ideology of modernization. The third is from the perspective of technology, referring to industrialization or technicalization.*

Li (2001), a Chinese scholar, holds that *cultural modernization is a process to carry forward, criticize and innovate the traditional culture and a process of cultural innovation (such as knowledge innovation, ideological innovation, etc.). Cultural innovation, in a broader sense, has become the foundation and driving force for mankind's survival and development. It is not only an important task of modernization, but also a way to create advanced culture. It is the modernization of people's knowledge, and the survival and development conditions of human being; and it is also a process of constantly updating and reconstructing the people's value*

system. *Cultural innovation and cultural modernization purports to realize the across-the-board development of human beings.*

(2) Process

Desai, an Indian scholar, has summarized four features of cultural modernization (Black 1976).

First, main elements of the cultural system become increasingly divided; the literacy rate is enhancing and secular education popularizing; and knowledge and institutional system based on knowledge training and aiming at producing and training professionals is established.

Second, a new view of culture appeared, which stresses progress and improvement, efficiency, happiness, free rein of capabilities, natural expression of emotions and feelings and development of personal features.

Third, a new trend appears, that is to adapt to increasingly broad social features with higher capability, enjoy individual flexibility, expand the range of interests, pay more attention to others and the environment, make efforts to develop self capabilities of development and change, respect others, have faith in science and technology, and agree to get paid according to one's own contribution.

Fourth, our society is capable to develop an institutional structure to deal with constantly changing problems and requirements.

Gerhards and Hackenbroch (2000) from Germany analyze the data of names (the first name) of newborn babies in Germany between 1894 and 1994, to explore the trend and reason of cultural modernization. They find out that the cultural modernization includes secularization, the change of family traditions and individualization and globalization, etc.

American scholars Divale and Seda (2000, 2001) analyze the cultural evolution in the course of modernization on the basis of data about 136 countries and regions. They find out that the modernization has undergone four stages: the change of government, trade, and education in the first stage; the change of health, technology, and transportation in the third stage; the change of family structure, region, and personal health; and the change of behaviors in the fourth stage.

(3) Outcome

Classic cultural modernization mainly results in the formation and spread of classic cultural modernity.

Cultural modernity is an abstract induction of the results of cultural modernization. If culture is embracive, cultural modernity and modernity is roughly identical, but if culture is regarded as an aspect of human being's civilization, cultural modernity is only one side of the modernity and a theoretical abstraction of results of cultural modernization. In some literatures, cultural modernity and cultural modernization as well as cultural modernity and modernity is not clearly distinguished.

Baudelaire (1821–1867), a French poet, holds that *part of the esthetics is eternal and never changes, but it is hard to define how much it is. The other part is relevant and temporary; and it can be the times, fashion, ethics, lust, one of them or several of them. Modernity is the transitory, temporary, incidental and artistic part, and the*

other half is eternity which never changes (Habermas 1987). Some scholars regard this concept as the source of cultural modernity or esthetical modernity.

Habermas from Germany agrees with Webber, a German sociologist, *about the feature of cultural modernity which means the essential rationality manifested in the religious and metaphysical world outlook is divided into three autonomic fields, namely, science, ethics and art. Scientific language, ethical theories and law, and the production and criticism of art have been gradually institutionalized. Special cultural fields have corresponding professions to deal with problems these fields. Such professionalization reflects the inner structure of each of the three levels of culture, that is cognition—instrumental rational structure, ethics—practical rational structure and esthetics—expressive rational structure* (Habermas 1987).

According to Ginger, a Spanish scholar (2007), *cultural modernity is usually regarded as the stress on the way of expression. It holds that art is neither the imitation of the outside world nor the reflection of the life of artists themselves. French cultural modernity appeared approximately in the nineteenth century, but the multiple modernities about art and culture mentioned a lot recently are obviously different from the old model.*

Chuanqi He (2003) insists that the new culture features of six characters: new knowledge based on science; new education referring to the popularization of modern education and science; new ideas meaning the rationalization of ideas, secularization of religions, the central position of people and society, faith in science and technology, modernism, economism, and nationalism; new spirit of science, democracy, liberty, equality, and philanthropy; new pursuit for progress, wealth, change and self-expression, and the development of personal value and capability; and new world outlook featuring efficiency, flexibility, adaptability, awareness to open and participate, trust, responsibility, achievement and just.

(4) Dynamics

Cultural modernization is affected by many factors, such as economy, society, politics, science and technology, and international relations. Karl Marx holds that the superstructure is determined by the economic base; on this basis, we can say economic development can drive the cultural modernization forward. Max Webber expounds in his book *The Protestant Ethic and the Spirit of Capitalism* the upbeat Protestant culture, rationalization, bureaucratization, and other issues and regards the Protestant culture as the root of capitalism and modernization of Europe.

(5) Model

Classic cultural modernization features diversity of its paths and models. Instead of following a settled way, cultural modernization in developed and developing countries has different characteristics.

6.4.2.2 Cultural Modernization Theory in the Broad Sense

Cultural modernization theory in the broad sense is a theoretical explanation of cultural modernization phenomena between the eighteenth and the twenty-first centuries. Proposed by a Chinese scholar Chuanqi He, it is the application of second

Table 6.57 Structure of the cultural modernization theory in the broad sense

Type	Theory	Major content
General theory	Core theory	Definition, process, result, dynamics, and model of cultural modernization
Branch theories	Stage theory	First, second, or integrated cultural modernization
	Stratified study	Modernization of the world, international, national, regional, organizational, and individual cultures
	Subfields study	Modernization of pure culture, cultural facilities, cultural industries, cultural life, structure, institution, ideas, etc.
	Sector theory	Modernization of languages, art and literature, philosophy, religion, science and technology, entertainment, publication, sports, tourism, etc.
Related theories	Other modernization theories	Classic modernization theory, postmodernization theory, multiple modernities theory, the second modernization theory, etc.
	Culture theories	Cultural evolution theory, cultural anthropology, cultural sociology, cultural economics, contemporary cultural study, etc.
	Other relevant theories	Experience economy, creative industry, copyright industry, modernism, postmodernism, etc.

Source: RGCMS (2009)

modernization theory in the field of culture. It includes the general theory, branch theory, and relevant theory (Table 6.57). This part deals with its general theory (Table 6.58), which includes the definition, process, result, dynamics, and model of the cultural modernization. Currently, people have quite limited knowledge about the second cultural modernization and integrated cultural modernization, so the cultural modernization theory in the broad sense has a large room of development.

(1) Definition

Cultural modernization is a manifestation of modernization in the field of culture.

Generally, culture is a complex of knowledge, institution, and ideas that can influence and explain people's way of life, and embodies mankind's pursuit of the true, the good, and the beautiful. In this organic whole, knowledge is its basis, institution serves as its core, and ideas is its soul. Of course, these roles may change in some cases. Culture domain is one of the six fields of human civilization study and involves the creation, production, spread, distribution, service, reservation, and consumption of culture.

The intension: cultural modernization is a frontier change and international competition in the culture field since the Enlightenment in eighteenth century. It includes the formation, development, transformation, and international interaction of modern culture, and creation, selection, spread, and withdrawal of cultural elements, and also involves the international stratification and competition to catch up, reach, and maintain the leading position of the cultural change in the world.

The extension: cultural modernization covers the modernization of cultural behaviors, structure, institution, and ideas, and the modernization of pure culture,

Table 6.58 General theory of cultural modernization in the broad sense

Aspect	Basic content
Definition	Cultural modernization refers to the modernization of the cultural sphere. It is both a form of the cultural change and international completion which have emerged since the Enlightenment in the eighteenth century; a process of formation, development, transformation, and international interaction of modern culture; and a composite course of innovation, selection, spread, and withdrawal of cultural elements, and involves the international stratification and competition to catch up, reach, and maintain the leading position in the cultural change
Process	Cultural modernization is a historical process, including cultural development, cultural transformation, international cultural competition, and change of status in the global cultural arena; including change of cultural life, structure, institution, and ideas; including the world frontier of cultural change and the process of reaching the world frontier, and so on. Between the eighteenth and twenty-first centuries, the frontier track of cultural modernization can be divided into two stages. The first cultural modernization refers to the profound change and transformation from agricultural to industrial culture and from feudal to civic culture, featuring rationalization, professionalization, being scientific, commercialization, etc.; and the second cultural modernization involves the profound change and transformation from industrial to knowledge culture and from material to ecological culture, currently featuring the cultural industrialization, networking (wide use of Internet), diversification, globalization, etc. Integrated cultural modernization means the coordinate development of the two stages. New changes will occur in the twenty-second century. It follows the ten basic principles of modernization (Table 2.15)
Result	The formation of cultural modernity, particularity, and diversity and side effect; enhancement of quality of cultural life and cultural competitiveness in the international arena; development of cultural facilities and the cultural industries; self-emancipation and across-the-board development of human being; remaining and still effective traditional value, etc. The first cultural modernization results in the forming of the first cultural modernity, particularity, and diversity, and its side effect includes indifference between people, etc.; the second stage leads to the second cultural modernity, particularity, and diversity, and its side effect includes the Internet dependence, etc.
Dynamics	Driving forces for cultural modernization include innovation, exchange, competition, adaptation, national interests, market demand, etc. The impetus models include innovation drive, two-wheel drive, joint effect, four-step super circulation, composite interaction, spread of innovation, spillover of innovation, competition drive (Table 2.20), etc. The driving forces vary in different countries and stages and in developed and developing countries
Model	Cultural modernization advances through diverse path and models, features starting point dependence and path dependence, and is affected by historical tradition, development level of the specific country, and the international system. The basic paths for the twenty-first century include paths of the first cultural modernization, the second cultural modernization, and the integrated cultural modernization. And each of these basic paths has many subpaths and development models

Note: There is not uniform definition about modern culture. Generally, modern culture includes the cultures of the industries society (primary modern culture) and of the knowledge society (hypermodern culture), and the latter is sometimes called the postmodern culture

Source: RGCMs (2009, 2010)

cultural industries, cultural facilities, and other aspects of culture, the modernization of cultural activities, content, form, system, and cultural management, the modernization in specific stages, at different levels and in each sector of culture, and the interaction between culture and modernization in other aspects, as well as the change of modernization distribution in different times and spaces.

Generally, cultural modernization refers to the world frontiers of cultural change and the process and action to reach these frontiers and includes the transformation from traditional to modern culture and the transformation from modern to post-modern culture, enhancement of cultural creativity, and improvement of the quality of cultural life; the development of cultural facilities and cultural industries, and self-emancipation and full development of mankind.

It is the intersection between cultural change and modernization (Fig. 6.25). There are three criteria for judging the cultural modernization: whether it can help the emancipation and development of the productivity without damaging the natural environment, can promote the justice and progress of the society without impeding the economic growth, and can promote the liberation and full development of peoples while maintaining social harmony. Cultural change can be regarded as cultural modernization only when it meets these criteria.

Cultural modernization has three sources: first, the worthy part of traditional culture to be inherited and carried forward, such as language, art, literature, and science and technology; second, partly denial and reversion of the traditional culture, such as developing the good part of cultural institution and ideas while discarding or reversing the improper part; and third, cultural innovation and cultural exchange, including knowledge innovation, institutional innovation, creation of new ideas, cultural spread, etc.

Cultural modernization of different types has different features and different requirements in different stages. For example, the basic requirements of the first cultural modernization include the professionalization, rationalization, and commercialization of culture and the driving the economic development, etc.; those of the second cultural modernization include industrialization, diversification, democratization, and the full development of people (Table 6.59).

The conceptual model of cultural modernization (Table 6.60) includes as follows: first, cultural development refers to cultural advance, positive adaptation, and the intersection between the two; second, cultural modernization is the

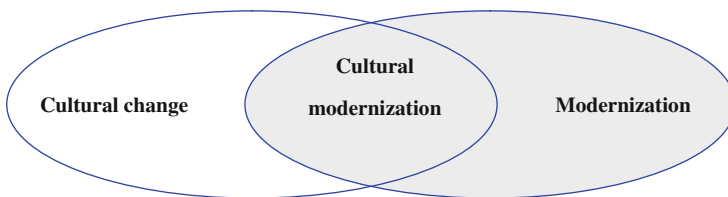


Fig. 6.25 Cultural modernization is the intersection of cultural change and modernization. Source: RGCMS (2009)

Table 6.59 Basic requirements of cultural modernization

First cultural modernization	Second cultural modernization
Professionalization: differentiation, specialization, and autonomy of culture	Industrialization: development of cultural commodities and service, cultural production and trade
Rationalization: secularization of culture, development of science, and self-discipline	Diversification: protection of cultural heritages, cultural diversity, and ecological culture
Commercialization: commercialization of cultural production and spread	Democratization: the central position of people, networking (wide use of Internet), and cultural liberty
Promoting economic development: help to liberate and enhance the productivity	All-round development of people: improvement of citizens' quality and more choices available for individuals

Source: RGCMS (2009)

Table 6.60 Conceptual model of cultural modernization

Item	Main content
Hypothesis 1	Cultural advance means the cultural change that can help the enhancement of the productivity, social progress, and the full development of people
Hypothesis 2	Positive adaptation of culture refers to cultural adjustment that can help the enhancement of the forces of production, social progress, and the full development of people
Hypothesis 3	Cultural transformation indicates the transition from agricultural to industrial culture and the transition from industrial to knowledge culture
Hypothesis 4	The change of international cultural status means that the position of a specific country's cultural creativity and quality of its cultural life varies in the global arena
Inference 1	Cultural development = cultural advance + positive adaptation of culture + cultural advance × positive adaptation of culture
Inference 3	Cultural modernization = cultural development × cultural transformation × international cultural competition and the change of international cultural status

Source: RGCMS (2009)

intersection of cultural development, cultural transformation, and international cultural competition and status change.

(2) Process

Cultural modernization is a complete, diverse, and long-lasting historical process. The process of cultural modernization can be divided into two types: frontier process and catch-up process with both common and different features. Between the eighteenth and twenty-first centuries, its frontier process can be divided into two stages (Table 6.61) with different connotations (Fig. 6.26).

The first cultural modernization refers to the transformation from agricultural to industrial culture, including the transition from authoritarian to democratic culture, feudal to civil culture, superstitious to scientific culture, dependent to professional culture, familial to welfare culture, and rural to urban culture.

Table 6.61 Periodic table of cultural modernization—change of cultural forms

Stage (approx. starting year)	Cultural change and forms (by examples)	Cultural modernization
<i>Age of knowledge culture</i>	<i>Culture of knowledge society (knowledge culture)</i>	
Transition stage (2050)	Global, universal culture, and experience culture	<i>The second cultural modernization</i>
Mature stage (2020)	Bionic, natural culture, and cultural humanization	Industrialization, networking, globalization, postmodern culture, knowledge, and ecological culture
Developing stage (1992)	Cyberculture, cultural industrialization, diversification	
Start stage (1970)	High technology, ecological, postmodern culture	
<i>Age of industrial culture</i>	<i>Culture of industrial society (industrial culture)</i>	
Transition stage (1946)	Modern culture, scientific philosophy, S&T revolution	<i>The first culture modernization</i>
Mature stage (1914)	Modern literature and art, leisure culture, commercialization	rationalization, popularization, modern culture, industrial and material culture
Developing stage (1870)	Technological revolution, modern philosophy, rationalization	
Start stage (1763)	The Enlightenment, the French Revolution, professionalization	
<i>Age of agricultural culture</i>	<i>Culture of agricultural society (agricultural culture)</i>	
Transition stage (AD 1500)	The Renaissance, religious reform, scientific revolution	(Agricultural revolution, agricultural culture)
Mature stage (AD 618)	Autocratic, religious culture, art and literature, education	
Developing stage (500 BC)	Feudal culture, religion, philosophy, art, and science	
Start stage (3500 BC)	Slavery, written language, city, country, knowledge	
<i>Age of primitive culture</i>	<i>Culture of primitive society (primitive culture)</i>	
Transition stage (10,000 years ago)	Horticulture and pasturage, handicraft, religion, and patriarchy	(Primitive agricultural revolution, slash-and-burn)
Mature stage (40,000 years ago)	Tool making, art, witchcraft, and matriarchy	
Developing stage (200,000 years ago)	Processing of stone tools, division of labor, gens by blood	(Tool-making revolution, primitive culture)
Start stage (2,500,000 years ago)	Invention of stone tools, use of fire, bands, primitive knowledge	

Note: The time of chronology and the features were based on the frontier track of the change of world culture

Source: RGCMS (2009)

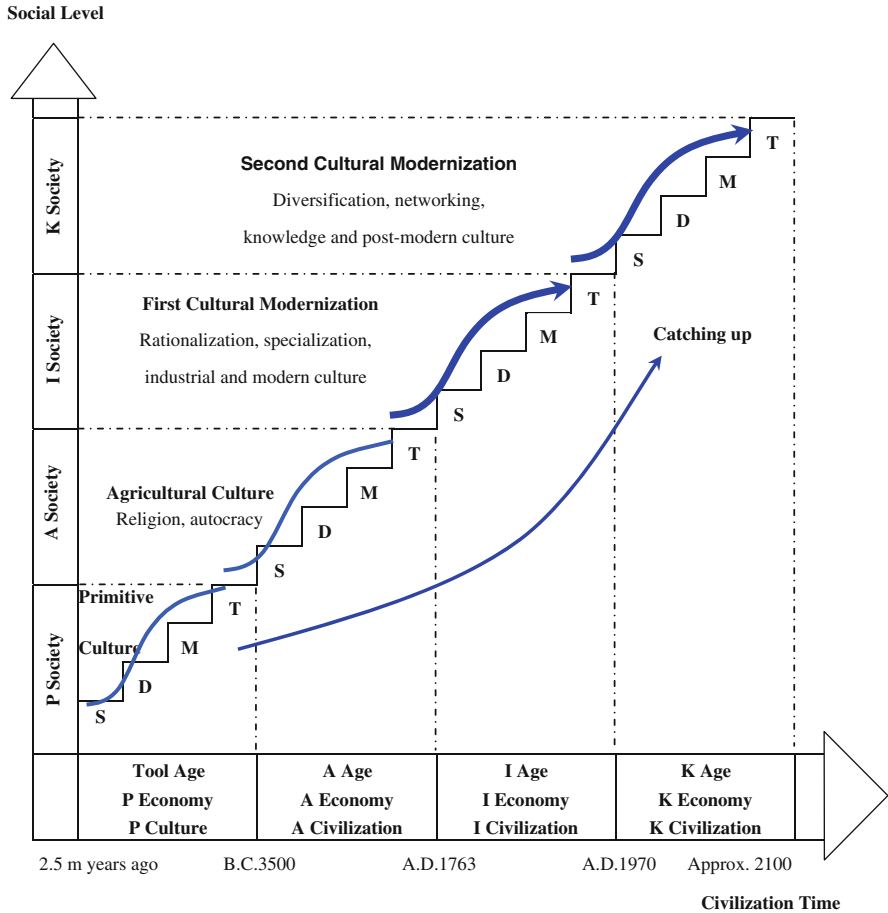


Fig. 6.26 Coordinates of cultural modernization. Note: P, A, I, and K refer to primitive, agricultural, industrial, and knowledge, respectively. S, D, M, and T refer to the start, developing, mature, and transition phase, respectively. The civilization time was the time based on the track of the forerunner of the civilization. Source: RGCMS (2009)

The second cultural modernization refers to the transformation from industrial to knowledge culture, including the transition from material to ecological culture, real physical to digital cyberculture, authoritative to civil culture, machine to humane culture, national to global culture, cultural convergence to cultural diversity, etc.

The two stages have different features (Table 6.62). If the first stage is a process of cultural differentiation, including the separation of culture from the whole society and the division insider culture, the second stage is a combination process with cultural integrating with and penetrating into economy and society and the cultural industries becoming a pillar industry.

Table 6.62 Features of the two stages

First cultural modernization	Second cultural modernization
Cultural differentiation, rationalization, secularization, specialization, professionalization, commoditization, individualization, popularization, systematization, concentration, bureaucratization, humanism, the development of scientific culture, etc.	Cultural dedifferentiation, industrialization, diversification, networking, digitalization, decentralization, ecologicalization, globalization, humanization, democratization, green and environmental friendly, intellectualization, and more new features will pop up

Source: RGCMS (2009)

If the first cultural modernization is the preliminary cultural modernization and a transition from traditional to primary modern culture, the second cultural modernization is the advanced cultural modernization and a transition from primary modern to the hypermodern culture. Integrated cultural modernization is the coordinate development of the twice cultural modernization. Cultural modernization will undergo new changes in the twenty-second century.

Cultural modernization has 12 features: being partially predictable, nonlinear, partially reversible, path dependence, multipaths, diverse, unbalanced, asynchronous, nonisolated, systematic, staged, and global.

Cultural modernization follows ten general principles of modernization (Table 2.15).

(3) Result

The outcomes of cultural modernization include the forming of cultural modernity, particularity, diversity, and side effect (Table 6.58).

The first cultural modernization results in forming of the first cultural modernity, particularity, and diversity and is the formation and spread of industrial and the modern culture, including cultural differentiation, democratic, scientific, popular, urban, welfare, and professional culture. Its side effect includes the indifference between people.

The second cultural modernization leads to the forming of the second cultural modernity, particularity, and diversity and is the forming and spread of knowledge and postmodern culture, including cultural dedifferentiation, cultural industrialization, cultural diversity, cyberculture, ecological culture, cultural innovation, individualized and global culture, etc., at present. Its side effect includes the excessive dependence on Internet. This stage will keep developing in the future.

From the perspective of cultural policies, the cultural modernization causes profound changes in six aspects: the completion of two cultural transformations; enhancement of cultural creativity and better quality of cultural life; change of cultural content and structure, different in cultural institution and ideas; liberation and full development of people; the change in international cultural system and the fact that cultural industries have become a pillar industry of the world economy, and so on. All these changes take place in pure culture, cultural facilities, cultural industries, and other aspects of the culture.

Theoretically, cultural modernization has three goals: to finish the first cultural modernization, to complete the second cultural modernization, and to catch up with, reach, and maintain the world frontier of the cultural change. Among them, the third one is dynamic and is applicable to limited subjects. For example, there is a world-leading level for cultural facilities, cultural industries, science and technology, information, sports, and tourism, but no for language, art, and religion.

From the perspective of policymaking, the cultural modernization also has three objectives, that is, to safeguard the cultural rights of a country or a nation, improve the quality of citizens' cultural activities and life, and enhance cultural creativity, cultural competitiveness, and cultural influence.

It is the ultimate goal of modernization and the key objective of the cultural and individual modernization to liberate and fully develop the human being. According to UNDP, human development is one of the people, by the people, and for the people (UNDP 2000).

Since the 1950s, the correlation between the results and objectives of cultural modernization has been gradually intensified both in the developed and developing countries.

(4) Dynamics

The dynamic factors and mechanism of cultural modernization are different (Table 6.58).

Generally, innovation is the fundamental source for cultural modernization, competition is the incentive for cultural change, adaptation is the adjustment made to deal with the change of the external environment, exchange can promote the cultural modernization, national interests direct the cultural development, and the market demands determine the development of the cultural industry. Innovation plays a bigger role in developed countries, while in developing countries, economic development and exchange is more important.

The impetus models of cultural modernization include innovation drive, two-wheel drive (Fig. 6.27), associative action (Fig. 6.28), and the spread and spillover of innovation. The driving forces for cultural modernization vary at different stages, in different countries, and during different stages.

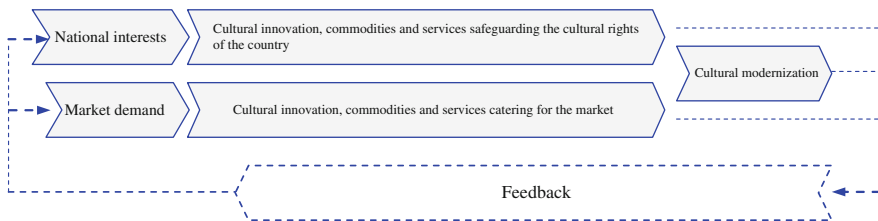


Fig. 6.27 Two-wheel drive model of cultural modernization. Source: RGCMS (2009)

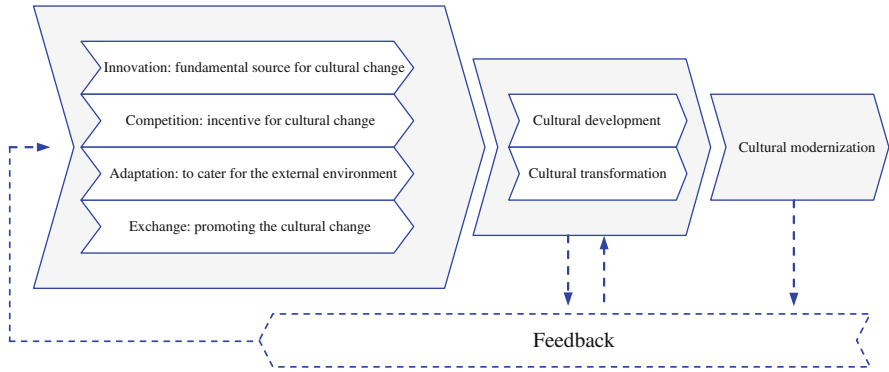


Fig. 6.28 Associative action model of cultural modernization. Source: RGCMS (2009)

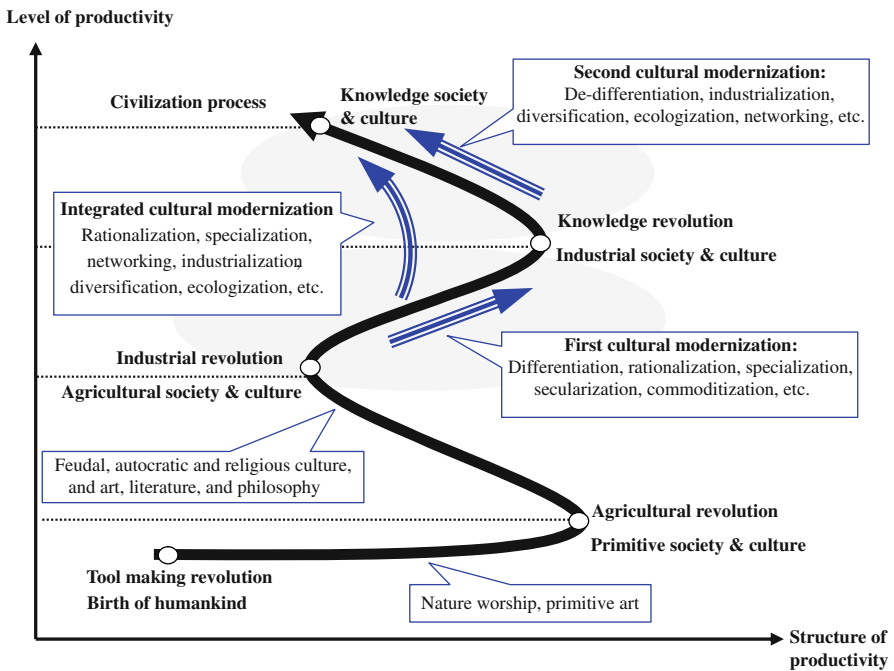


Fig. 6.29 Three paths of cultural modernization in twenty-first century. Note: affected by the networking and ecologization, the first cultural modernization in the twenty-first century may present some new features. The horizontal coordinate represents the labor structure of productivity and is the same as in Fig. 6.12. Source: RGCMS (2009)

(5) Model

There is no one-size-fits all best path for cultural modernization; instead, the cultural modernization follows three basic paths in the twenty-first century (Fig. 6.29).

There is no standard model but only rational selection for cultural modernization. Both successful and failing models may be created in different countries and regions and in different stages of the cultural modernization. These models can be researched, learned, and used as a reference later.

In the past three centuries, the models of cultural modernization differ a lot in developed countries. For example, French model of cultural modernization is both romantic and revolutionary, German model is rational and critical, American model highlights the practical use and the spirit of science, British model is of both commercialism and classic spirit, and Japanese model features both commercialism and Confucianism.

Generally, cultural modernization has different contents and features in specific stages and sectors and at different levels. Theories about the cultural modernization are applicable to the world and national levels but should be adjusted at the regional level.

China Modernization Report 2009: Cultural Modernization Study discusses the principle and methodology of cultural modernization and theories for different stages including the first cultural modernization, the second cultural modernization, and the integrated cultural modernization.

(6) Integrated Cultural Modernization

Integrated cultural modernization is a basic path of the cultural modernization and is suitable for developing countries in the twenty-first century. It is a compound process of the innovation, selection, spread, and withdrawal of cultural elements and the interaction of two cultural transformations (from traditional to primary modern culture and then from primary modern to the hypermodern culture) and constant development to the knowledge culture. It also involves the international competition in which developing countries make painstaking efforts to catch up with the world-leading position of cultural modernization. Its contents include the cultural industrialization, cultural diversity and plurality, Internet culture, professional culture, scientific culture, democratic culture, rational culture, green culture, etc.

Through integrated cultural modernization, the cultural creativity, the quality of cultural life, cultural facilities, and cultural industries shall reach the cutting-edge level of cultural modernization in the world. The ultimate goal of integrated cultural modernization is the forming of the second cultural modernity and particularity. The principles of its driving forces include innovation drive, two-wheel drive, and associative action; besides, the national goal, cultural globalization, and the international cultural exchange also impose great influence on the comprehensive cultural modernization.

The integrated modernization, as a new path, shall coordinate two transformations, namely, from agricultural to industrial culture, and then finally to the knowledge culture (Fig. 6.30).

If we see this planet as a physical homeland, culture is a spiritual one for the humankind, and cultural life is people's mental life; and if economic modernization is the modernization of people's material life, then cultural modernization is that of people's mental life and that of people's spiritual homeland. As the materials are

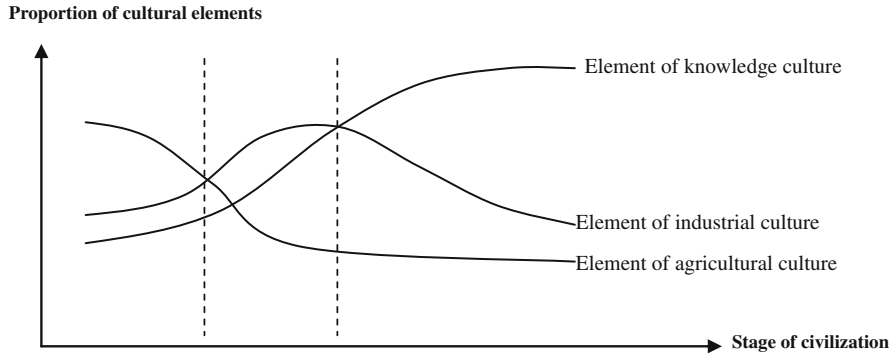


Fig. 6.30 Diagram of integrated cultural modernization. Source: RGCMS (2009)

becoming dramatically abundant, the importance of mental life is increasingly highlighted. In the twenty-first century, cultural innovation, industries, and modernization will play a bigger and bigger role.

6.5 Ecological Modernization

Humans have been living in the natural environment since their birth, which supports men's existence and provides men material and cultural services (MEA 2005). Ecological modernization is one kind of the interaction between modernization and natural environment and the ecological transformation of modernization. It includes staged and stratified ecological modernization, and that of different ecological subfields and sectors (Fig. 6.31).

6.5.1 Studies

The ecological modernization study is part of modernization study related to natural environment. It can start with the early twentieth century and be conducted from the three perspectives of the past, the present, and the future.

6.5.1.1 Research Paradigm

The objects of ecological modernization research refer to the interaction between modernization and natural environment and ecological transformation, including the formation and development of ecological civilization, the modernization in six fields such as ecological effect, and ecological modernization at six levels such as the world. The content of the research includes the modernization of ecological behavior, structure, institution, and ideas, as well as the process, result, dynamics, and model of ecological modernization, which together form the structural matrix as follows (Table 6.63). The research objects also cover the ecological modernization at different stages and of different sectors.

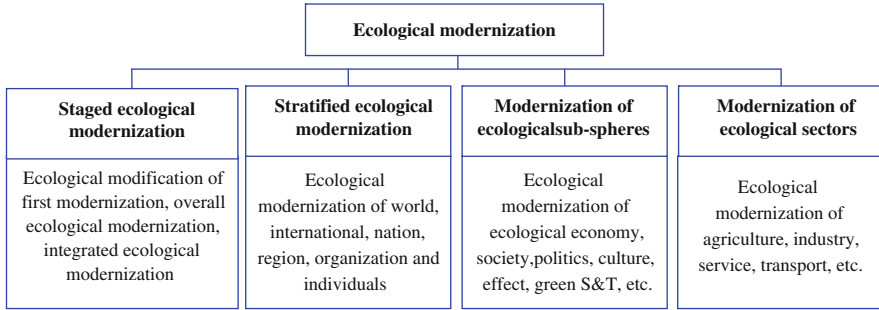


Fig. 6.31 Objects of ecological modernization study. Note: overall ecological modernization refers to that occurring in the process of second modernization, while integrated ecological modernization occurs in the process of integrated modernization, which is also a basic path of ecological modernization for developing countries. Green S&T plays a role in scientific and technological modernization and is the result of the ecological modernization in the S&T sector. Considering its importance in the process of ecological modernization, we can upgrade it as a subdomain of ecological modernization

Ecological modernization is the beneficial coupling of modernization and natural environment and the ecological interaction and transformation of modernization. Ecological interaction refers to the interaction between modernization and natural environment, which might be beneficial to both parties, favorable to only one party or detrimental to both, while ecological transformation refers to that of modernization and civilization, where the mode of modernization and civilization transforms from neglecting and controlling natural environment to valuing and protecting natural environment, including the environment-friendly changes of human behavior, structure, institution, and ideas caused by the modern ecology and environmental awareness.

Ecological modernization research is a subdomain of modernization research, the methods of which can be applied here too. It covers the whole process or a certain stage, the whole world, countries, or regions.

There are abundant methods applicable to ecological modernization research, such as modeling, case study, statistical analysis, quantitative evaluation, qualitative analysis, comparative analysis, social survey, experimental observation and measurement, time-series analysis, cross-sectional analysis, process analysis, coordinate analysis, etc. The relatively influential research methods are the pressure-state-response (PSR) model (Fig. 6.32), the analysis of social metabolism and material flow, ecological footprints, index of real progress, industrial ecology, ecological system evaluation and the coordinate analysis of ecological modernization, etc.

In the PSR model, pressure refers to the environmental pressure imposed by human activities, state refers to the state of environment and resources, and response refers to that of governments, enterprises, and individuals to the environmental state, the three of which form a feedback adjustment cycle. The environment and the economy, the environment and the society, and the economy and the society interact with each other in all human activities. The analysis of material flow

Table 6.63 Matrix of ecological modernization study

Content		Object		
		Ecological civilization	Ecological effect, economy, society, politics, culture, green S&T	The ecological transition of world, nation, region, organization, and individuals
		Ecological modernization	Ecological modernization in the six subspheres	Ecological modernization at the six levels
Element	Behavior	Modernization of ecological behavior, structure, institution, and ideas	Modernization of ecological behavior, structure, institution, and ideas in the six subspheres	Modernization of ecological behavior, structure, institution, and ideas at six levels
	Structure			
	Institution			
	Idea			
Aspect	Process	Process, result, dynamics, and model of the ecological modernization	Process, result, dynamics, and model of ecological modernization in the six subspheres	Process, result, dynamics, and model of ecological modernization at six levels
	Result			
	Dynamics			
	Model			

Note: Ecological civilization refers to a green civilization which is environment-friendly and ecological reasonable. It is part of or a representation of knowledge civilization. Ecological effect refers to the changes of natural environment, resources, and ecological system caused by modernization. Ecological economy refers to a green economy which is environment-friendly and ecological reasonable, including ecological agriculture, industries, and green services. Ecological society refers to a green society which is environment-friendly and ecological reasonable, including ecological cities and rural areas, green energies, and transportation and ecological safety. Ecological politics refers to green politics which is environment-friendly and ecological reasonable, including environmental legislation, taxation, and politics. Ecological culture is a green culture which is environment-friendly and ecological reasonable, including ecological and environmental awareness, etc. Green S&T is one which is environment-friendly and ecological reasonable, including green techniques, manufacture, process, clean production, etc. The ecological behavior, structure, institution, and ideas mentioned in the theory of ecological modernization refer to those related to ecological interaction and transformation in the process of modernization. The content of ecological modernization research also includes the ecological modernization at different stages and of different sectors (industries), frontier analysis, trend analysis, frontier process analysis, catch-up process analysis, and the interaction between elements of ecological modernization and different fields

Source: RGCMS (2007)

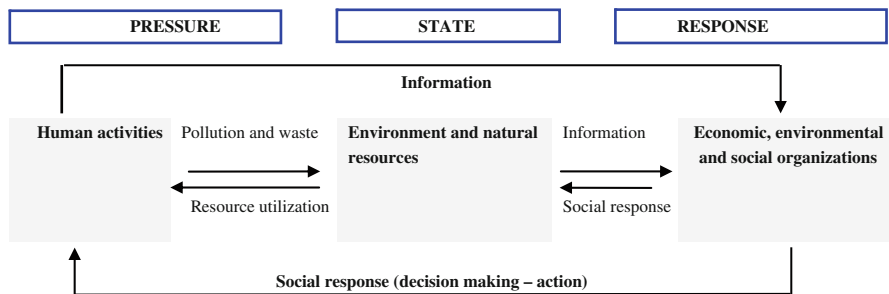


Fig. 6.32 The simplification of the PSR model of OECD. Note: it is the short representation of the PSR model of OECD (2003)

includes that of total material flow as well as that of material life cycle in the process of economy.

6.5.1.2 Brief History of Ecological Modernization Study

A number of schools studying the relationship between resources, environment, ecology, economy, and the society have emerged since the 1970s, with a huge amount of literature accumulated. Among all the theories, the ecological modernization theory (Huber 1982, 1985) proposed by a German scholar in the 1980s has become a major theory in the environmental sociology in developed countries (Mol and Sonnenfeld 2000). Ecological modernization research focuses on the interaction between and the changes of science and technology, economy, society, and natural environment in the process of modernization, instead of evolution of natural environment, ecological system, or ecology.

(1) Origin

Ecological modernization research is originated from environmental movements and reforms. Essentially, ecological modernization is an efficiency-oriented solution to environmental problems (Hajer 1995) and a reconstruction of the environmental agenda. In the 1970s, environmental movements exerted huge influence upon the society, and environmental protection was considered the burden of enterprises and governments. It was difficult for them to choose between environmental protection and employment and growth. In the late 1980s and the 1990s, the concept of ecological modernization was introduced in the policy agenda of developed industrial countries as a new option. According to the concept, under the guidance of ecological principles, the coordinated development of environmental management and economic growth is possible (Young 2000).

(2) Stages

According to the Dutch scholar Arthur P. J. Mol, ecological modernization research can be divided into three stages as the follows (Mol and Sonnenfeld 2000; Mol 2001):

Stage I (Early 1980s). (1) Emphasizing the role of technological innovation, especially that in industrial production in environmental reform; (2) criticizing the bureaucracy and low efficiency; (3) supporting the role and impetus of the market in environmental reform; (4) systematic view on social organizations and social conflicts; (5) analysis at the national level.

Stage II (Late 1980s to mid 1990s). (1) Relatively weakening the role of technological innovation; (2) placing more emphasis upon the balance between the government and the market; (3) placing more emphasis upon the role of system and culture and the role of social organizations in environment-caused social transformation; (4) focusing on the comparative studies of the industrial production in OECD countries.

Stage III (Since mid 1990s). Extending the research theoretically and geographically, including the transformation of consumption, study of non-OECD countries, and global process of ecological modernization. It is called ecological

modernization age by some people. The research priorities in this stage include: (1) challenges imposed by environmental problems upon the society, technology and economic reform; (2) the transformation of core social systems of modernity, such as those of science and technology, production and consumption, politics and governance and market, at various levels such as regional, national and global; (3) locating in the field of science, differentiating from antiproductivity, anti-industrialization, postmodernism, strong social structuralism and a number of schools of new radicalism.

(3) Disputes

Disputes over ecological modernization have never ceased to exist since the theory came into being (Mol and Sonnenfeld 2000).

First of all, disputes over modernizations. In the 1970s, there was a powerful thought in the environmental movements and among the sociologists in western Europe, known as the theory of antimodernization, anti-industrialization, and antiproductivity, according to which, pollution and damages to resources were the result of industrialization and environmental and ecological degeneration was the evidence of dying modernization process. However, according to ecological modernization theory, some fundamental transformation of modernization models is necessary, the aim of which is to repair its structural defects. It is these defects that cause serious environmental damages. But by doing so, it does not mean to abandon modern social systems. Modernization is not outdated, but structural transformation is required.

Secondly, disputes over postmodernism. Some postmodernists place much emphasis upon postmaterial value and are against or critical toward modernization. However, according to the ecological modernization theory, we cannot weaken the material power of the society and must continue modernization, problems caused by modernization can be solved by the deepening of modernization, and likewise, problems of industrialization can be solved by superindustrialization.

Thirdly, disputes over radical ecologicalism. According to ecologicalism, modern value or modern production and consumption models need essential changes and real green value, green movements and politics are also needed. Some hold that ecological modernization is the reconciled product of environmental reform, which does not place environmental goals as its priority, but place them with economic goals as important factors the government has to consider in the process of policymaking. Some other people hold that the theory of ecological modernization is a sort of excuse for the government's conservative environmental policies.

Fourthly, disputes over ecological equality. It is thought that ecological reform and eco-friendly housing, vehicles, food, and services are all prepared for the rich, while the poor have to face the problems such as the environmental tax of food, energies, and water, which widens the social gap. The theory of ecological modernization focuses on the environmental reform and ecological transformation in developed countries, the latter of which also contributes to the widening inequality of international community. The deep ecology requires equal treatment of animals. The environment-related social inequality has become the hotspot of disputes.

6.5.1.3 Facts and Experience About Ecological Modernization

Ecological modernization, starting from the 1970s, is a representation form of modernization. Since the industrial revolution and political revolution in the eighteenth century, there have been four waves of modernization in the frontier. Ecological modernization is part of the fourth wave of modernization and also an ecological transformation of modernization. Facts of and experience gained from ecological modernization have been systematically analyzed in *China Modernization Report 2007: Ecological Modernization Study* (RGCMS 2007) as follows.

(1) Facts

The four aspects of the historical facts of ecological modernization will be discussed here.

First, basic facts in the field of ecological effects. Since the eighteenth century, the size and density of population have been increasing, so are the fossil energy production and ecological footprints; the cultivated land, grassland, and freshwater resource per capita have been decreasing, so are the forest resource per capita and biological diversity; the iron and steel production per capita has dropped down after a period of growing, so has the air pollution per capita and BOD (biochemical oxygen demand) of industrial wastewater per capita; mineral production per capita varies in different regions; the green gas emission is increasing generally but decreasing in some countries. Since the nineteenth century, the number of nature reserves has been increasing. In 1998, an article was published in the journal *Science* describing the influence of human activities upon the Earth: *about one third to half of the land has been changed by human activities; since the industrial revolution, the volume fraction (amount) of carbon dioxide in the atmosphere has increased by 30%; the total of artificial nitrogen fixation has surpassed that of natural nitrogen fixation; the fresh water on the land surface utilized by human beings has reached more than 50% of the total that can be utilized; in the past nearly 2,000 years, about one fourth of the bird species on the Earth have disappeared and about two thirds of the fishery resources in the oceans have been over exploited or used up* (Lubchenco 1998).

Secondly, basic facts in the field of ecological economy. Since the eighteenth century, the efficiency of material production and land production has increased, while the proportion of material economy has dropped down; the material output value per capita, grain yield per unit, and modern organic agriculture have increased. Since the twentieth century, the utilization of fertilizers per hectare in agriculture has first increased and then decreased, so have the economic energies density, resource density, and the carbon dioxide emission per unit of GDP; the waste recycling rate has climbed up, the consumption proportion of natural resources varies from place to place, and the phenomena of Environmental Kuznets Curve (EKC) have also increased. EKC refers to the inverted U-shaped curve illustrating the relationship between environmental degeneration and per capita income.

Thirdly, basic facts in the field of ecological society. Since the eighteenth century, the proportion of material labor has declined. Since the nineteenth century,

per capita service income has risen, so has the proportion of population living a long life and the number of safe drinking water and sanitation facilities in urban and rural areas. Since the twentieth century, the urban wastewater treatment rate has ascended, so has the per capita urban waste; the urban air pollution has first increased and then decreased, while the energy utilization efficiency has first decreased and then increased; the environmental risks vary from place to place.

Fourthly, comprehensive facts in the field of ecological modernization. Since the twentieth century, ecological efficiency and structure have undergone continuous change, so has ecological system and ideas; ecological transformation is highly imbalanced and asynchronized; international environmental agreements and international pollution transfer have global influence; economic development is not obviously related to many per capita natural resources; the production and the consumption models of natural resources vary from variety to variety and from place to place. In the past over 20 years, developed countries have witnessed continuous economic growth and substantially improved environment, and the decoupling rate between national economic to environmental indicators has reached 52% in organization of economic cooperation development (OECD 2002).

(2) Technical Path

The efficiency and effect of human economic activities are closely related to techniques applied. Scientific and technological development is an ever evolving process. In different historical stages throughout the human civilization, there are different dominating techniques with different impacts upon the environment. Due to the technical progress of human beings, there is a technical path in the historical evolvement of ecological modernization. Since the development of the world does not synchronize with each other, we can find the coexistence of different techniques in a certain historical section, which leads to the diversified sectional features of technological influence and staged time-series features of ecological modernization.

For instance, in the agricultural civilization age, agricultural techniques including irrigation agriculture and water conservancy techniques, as well as handicraft and mining techniques, dominated the human society. The major consequence caused by then economic activities to the environment was land degradation in general. Mechanization and electrification in the industrial age led to the large-scale industrial production, whose influence upon the environment was extended to include air pollution and river pollution, etc. In the knowledge age, economic globalization and the development of information technology and biotechnology contribute to environmental management and climate change becoming a global issue.

(3) Ecological Modernization and Ecological Institution

It was in the industrial revolution period when environmental problems drew social attention; it was not until the 1970s when they drew global attention. Legislation and systems on environment can be traced back to the period of industrial revolution. For instance, Britain, the pioneer of industrial revolution, began environmental

legislation as early as in the early nineteenth century. Since the nineteenth century, there have been four stages of the development of ecological and environmental systems. Particularly in the past over 20 years, there have appeared two trends of the world environmental legal systems: one is the drastic increase of the number of environmental legislation and international environmental agreements; the other is the growth of environmentalist nongovernmental organizations (NGOs) which have become the actual force of international environmental protection (Allenby 1999).

(4) Experience

Ecological modernization has a history of over three decades starting from the first United Nations Conference on Human Environment in 1972. It has been progressing on the way paved by disputes and conflicts. Its progress is substantial especially in developed countries such as some countries in the west and north Europe. The experience of ecological modernization in the past is of instructive significance.

First of all, ecological modernization is a historical necessity. With the increase of global population density, the material demands and waste emission of the human beings will approach the limit of natural environment. Though technological advance can ease part of the environmental pressure, it is not enough. The ecological transformation of the models of human lifestyle and modernization is a necessity. With the globalization and the development of ecological modernization in developed countries, it is inevitable for developing countries to avoid the international and domestic pressure of ecological modernization. Therefore, it has gradually become an irreversible trend of the world.

Secondly, the process of ecological modernization will not go smoothly. It requires the rational dealing of the relationship between economy and environment. People's notions change as the economy fluctuates and the environment changes. Environmental awareness will be challenged in economic downturn, while economic growth will be questioned in environmental crisis. Under different circumstances, people have different options choosing between vehicles and blue sky. Of course, it is best to have both vehicles and blue sky. Ecological modernization has been moving forward in disputes.

Thirdly, ecological modernization requires innovation and learning. It requires eco-friendly technological and system innovation and reasonable structural and model transformation. The key to this process is the change of people's notions. Innovation and idea change is the essence of pioneering countries of ecological modernization, while in those countries lagging behind, learning and idea change is the priority and regional innovation is a necessity too. Therefore, innovation and learning are the two levers to drive ecological modernization.

Fourthly, ecological modernization needs domestic cooperation. As an ecological revolution, it involves the ecologically reasonable transformation of economy, society, politics, culture, environmental management and individual behavior. Governments, enterprises, societies, and environmental protection organizations are all affected by this revolution. They are the subject and the object of the revolution; they need to change not only others but also themselves. Therefore,

conflicts and cooperation are inevitable. In the 1960s and 1970s, conflicts and confrontation marked the distinct features of environmental movements. Since the 1980s, though the fight for environmental protection has been going on, cooperation for environment protection has become the mainstream. Cooperation between all people of and democratic participation in the environment agenda has become one of the typical features of ecological modernization.

Fifthly, ecological modernization needs international cooperation. There is only one Earth in the entire solar system, on which all the human beings live. The circulation of atmosphere, water, and carbon and the flow of materials and energies are carried out worldwide, which transcend national borders and different peoples. The concerted cooperation of all the citizens in the world is needed to deal with global climate change, damaged ozone layer, extending air pollution, waste pollution transfer, protection of biodiversity, and the reasonable development and utilization of natural resources and energies. Air is without boundaries. Though global equality and cooperation is more than a slogan than a reality, yet international cooperation in many fields has been carried out.

Sixthly, there is no best model for ecological modernization, which can be classified into the following three categories worldwide.

The first is the European model with idealism as its feature. Most European countries, with relatively small territories, are vulnerable to the impact of international environment. Thanks to the academic tradition of western European countries, they became the first to bring forward the theory of ecological modernization to promote the environmental cooperation in the Europe Union and actively spread it to other parts of the world.

The second is the North American model with pragmatism as its feature. Countries in the North America enjoy large territories and are endowed with abundant natural resources. They were the creator of industrial ecology, promoting environmental legislation and treatment, caring for the protection of biodiversity, and valuing the environmental quality and economic growth, yet with only a few theoretical innovations in this domain.

The third is the model of developing countries with realism as its feature. In developing countries, the promotion of ecological modernization is selectively done according to their respective national conditions, and the government and scientific communities play a larger role in their counterparts in developed countries. Among them, some choose integrated ecological modernization, while some prefer ecological modification of classical modernization.

Since the 1990s, international environmental trade and diplomacy have been very active with the economic growth and environmental improvement in developed countries and the double pressure caused by economic development and environmental protection facing developing countries. In this context, some scholars lay emphasis upon the bearing capacity of resource environment and ecological transformation of world modernization, while some apply double standards, requiring developing countries to protect the environment and save resources on the one hand while allowing developed countries to maintain a relatively high level of resource consumption and per capita ecological footprint.

6.5.1.4 Present State and Prospect of Ecological Modernization

(1) Present State

First of all, general level: by 2004, 58 countries in five continents of the world including Switzerland had entered ecological modernization. Among them, ten countries including Germany were in the developing stage, accounting for 8% of the sample countries, while 48 countries including the United States were in the beginning stage, accounting for 41% of the sample countries.

Secondly, the world frontier: the top ten countries with the highest ecological modernization index in the world in 2004 were ranked as follows: Switzerland, Sweden, Austria, Denmark, Germany, France, Finland, Britain, the Netherlands, and Italy.

Thirdly, progress: by the 1970s, 7 countries including the Netherlands had entered ecological modernization, by the 1980s, 11 countries including Italy, and 40 countries including South Korea by the 1990s.

(2) Prospect

First, the world's advanced level: given the yearly growth rate from 1980 to 2004, the ecological modernization index of developed countries in 2050 will be two times that in 2004 and that in 2100 will be two times that in 2050.

Secondly, the world average level: the average world level is about 50 years behind the average level of developed countries. By 2050, it will be equivalent to the average level of developed countries in 2004.

Thirdly, national distribution: by 2050, there will be over 70 countries entering ecological modernization, and by the end of twenty-first century, most countries in the world will enter ecological modernization, with some completing it and realizing the win-win coexistence of man and nature.

6.5.2 Theories

The ecological modernization theory is a field theory of modernization, covering ecological interaction and transformation in the process of modernization. So far, it consists of two schools: European theory of ecological modernization and ecological modernization theory in broad sense.

6.5.2.1 European Theory of Ecological Modernization

The theory of ecological modernization was generated in Europe in the early 1980s. Over the past more than 20 years, it has developed into a major theory in environmental sociology. It is mainly based on European experience with its researchers mainly from European countries. That is why it is known as European theory of ecological modernization. It is thought that German scholar Huber is the proposer of this theory (Mol 2001).

Since the 1970s, environmental reform and ecological transformation have generally occurred to the social systems and production models in industrial countries. And the theory of ecological modernization proposed in the 1980s was

trying to explain and describe the nature, meaning, and impetus of this transformation process (Mol 2001). This school is very active and constantly progress, without unified theoretical definition and statement yet.

(1) Definition

There is no unified definition about ecological modernization yet (Table 6.64). Generally, ecological modernization is used to describe a new model seeking for the economically efficient, social just and eco-friendly development. It is a win-win

Table 6.64 Definitions of ecological modernization

No.	Definitions or explanations	References
1	Ecological modernization is not only an extensive social process of ecological transformation of industrial models of production and consumption but also an inevitable stage of industrial social development, that is, the third stage starting from 1980	Huber (1982), Murphy (2000), Andersen (2002)
2	Ecological modernization is an inevitable process of social transformation from industrial modernity to ecological modernity and industrial society to ecological society	Janicke (1985), Simonis (1988), Cohen (2000), Pataki (2005)
3	Ecological modernization refers to the restructure of macroeconomy and technical structure, advance of eco-friendly technologies, and the transformation of ecological structure, that is, the ecological transformation of production and consumption models	Janicke (1985), Simonis (1989a), Murphy (2000)
4	Ecological modernization is a solution of modernism and technology to environmental problems, which requires the combination of technology and system to solve environmental problems, and realize the win-win game of economy and environment	Hajer (1995)
5	Ecological modernization is often regarded as the synonym of strategic environmental management, industrial ecology, and ecological reconstruction. Ecological reconstruction is a continuous process of transformation and reform of core systems in modern society inspired by ecology and caused by environment	Buttel (2000), Mol (2001)
6	Ecological modernization has three levels of meaning: First, it is an environment-related sociology theory; secondly, it is a new paradigm used to analyze environmental politics and policy change; and thirdly, it truly reveals the actual progress industrial democratic countries have made concerning ecological problems and economic policies	Mol (1995)
7	The theory of ecological modernization describes the process of practical transformation of social practice and systems caused by the environment in industrial societies, including the characteristics, content, and impetus of the process	Mol (2001)

Source: RGCMS (2007)

model for economy and environment and allows the coordination between economic growth and environmental protection and delinking the connection of economic and material flow, and economic growth with environmental pressure.

The core of ecological modernization is prevention, innovation, and structural transformation, with the following six major points:

First, to foster ecological modernity, modern industrial society needs continuous ecological reconstruction, which is caused by ecological and environmental awareness, including social practice, and transformation and reform of systems. Though the present ecological transformation process is not linear or irreversible, yet to some extent, it will last forever and is hard to regress (Mol 2001).

Secondly, modern science and technology and market economy shall play an integrated role in ecological reconstruction. Modern science and technology is the core mechanism in ecological reform. Meanwhile, the importance of economy and market impetus in ecological reform shall be stressed. Industrial innovation encouraged by market economy and promoted by the government can facilitate environmental protection.

Thirdly, deal with environmental challenges correctly. We should regard environmental challenges not only as a crisis but also an opportunity, pollution reduction as a tool to strengthen economic competitiveness instead of an end-user processing technique requiring additional expensive maintenance costs, and ecological modernization as an opportunity for environment-sensitive technology (Christoff 1996).

Fourthly, establish a new environment agenda. To form an environment agenda alliance transcending all kinds of conflicts and interests, managing natural resources and environmental risks, and resolve regular conflicts between economic growth and corresponding environmental management.

Fifthly, formulate forward-looking and preventive environmental policies. Under the guidance of prevention principle, long-term structural change of macro-economic structure, production and consumption model, technical structure and environmental policies shall be promoted, so is environmental reform.

Sixthly, apply the principle of industrial ecology and establish participatory strategic environmental management (Huber 2000).

(2) Basic Content

According to the Dutch scholar Hajer (1995), there are six changes of ecological modernization.

First of all, the technological change of environmental policies. The model changes from emergency response and treatment to forecast and prevention. Many new technologies are introduced to enable enterprises to integrate environmental awareness into their own cost and risk analysis. New environmental policy tools include the “polluter pays” policy, cost-benefit analysis, risk analysis, the prevention principle, tradable pollution right, pollution tax, resource tax, emission tax, etc.

Secondly, the new role of science in environmental policymaking. Ecology, especially systematic ecology, plays an increasingly important role. Scientists need

to study the multiple pressures and critical loads of nature to determine the pollution level that nature is capable of bearing.

Thirdly, the change of microeconomy. The economic notion is changed from merely increasing cost to protect the environment to pollution prevention payment, which promotes the development of low or zero waste techniques and multivalued auditing (success is not measured merely by economic benefits but also by energy and resource utilization). As a result, preventive investment gradually replaces the end treatment technique.

Fourthly, the change of macroeconomy. According to ecological modernism, nature is public goods or resource. In traditional notions, nature was basically regarded as free goods and could be used as the receiver. It emphasizes the protection and management of rare natural resources and encourages ecological pricing, cycling, and technological innovation.

Fifthly, the change of environmental politics and legislation process. Nature is no longer regarded as a receiver, and more and more enterprises support pollution prevention. Environmental statistics and relevant analysis lay the foundation for policymaking.

Sixthly, the participatory system of environmental policymaking. Environmental policymaking is an open, participatory process, involving environmental nongovernmental organizations, local residents, environmental evaluation organizations, consultancy organizations, and government organizations to form an environmental agenda alliance. For a new policy agenda, it is often the case that one core concept is brought forward after research, and then other departments make their opinions about it and propose changes to be made in relevant fields.

(3) Basic Features

According to the Dutch scholar Mol (1995, 2001), there are five features of ecological modernization.

First, the change of the role of science and technology in environmental degradation and reform. (1) Science and technology is not only the cause of environmental problems but also the potential and practical tool to deal with and prevent them. (2) Traditional treatment and recovery means will be replaced by more preventive social and technological means, which integrate environmental awareness in the design stage of technological and organizational innovation. (3) The increasing uncertainty of scientific and expert knowledge on the definition and reasons of and solutions to environmental problems will not weaken the role of science and technology in environmental reform.

Secondly, increasing importance of economy, market impetus, and economic organizations. Producers, clients, consumers, financial organizations, insurance companies, application departments, and business associations have increasingly become the social carrier of ecological reconstruction, innovation, and reform, which, together with governmental organizations and new social movements, change the relationship between the government and the market in environmental reform.

Thirdly, multiple changes of the traditional core position of the government in environmental reform. (1) The decentralizing, flexible, and consultation-based governmental management has become a trend, with less top-to-bottom command and control. (2) Nongovernmental organizations participate in and replace the government's traditional tasks to a larger extent. (3) Supranational and international organizations have to some extent weakened the traditional role of the national government in environmental reform.

Fourthly, the position, role, and notion modification of social movements in the process of ecological transformation. Environmentalists' position which was based on antimodernism principle, existed in the margin of core policymaking system or was even excluded from the policymaking system, has been changed; they have participated in the policymaking process of the government and the market to a larger extent. Hence, the bipolar or dual strategy of cooperation and conflict is formed.

Fifthly, the change of unorganized practice and the appearance of new principles in political and social agenda. Both those against economic and environmental interests and those neglecting the importance of environmental awareness are thought legal. It seems that the intergenerational solidarity based on the protection of food has become an undisputable common core principle.

(4) Basic Principles

British scholar Cohen and others have summarized six basic principles of ecological modernization (Cohen 1997, 1998; Picou 1999).

First, the principle of superindustrialization. It is applied in ecological modernization to improve the design program of industrial technologies. It includes the clean, low resource intensive technology and production process, reduces the demands for expensive, additional end techniques, and greatly lessens the relevance between economic development and environmental degradation, to bring modern industry onto a new track.

Secondly, the principle of governmental management. It is noticed in ecological modernization that enterprises' self-management of pollution used to be ineffective, and thus, more strict governmental environmental management is required. Such management will enlarge the first-mover advantage and promote economical and practical green products and innovative production system.

Thirdly, integrated management of pollution. According to ecological modernization, the development of integrated pollution management strategy can prevent the transfer of pollution in the biological environment. This strategy is part of the redesign of the production process and management.

Fourthly, the principle of prevention. According to ecological modernization, industrial departments shall set up prevention plans to deal with hazards to human health and environment more promptly and extensively.

Fifthly, the environmental responsibility system. It is required in ecological modernization process that all the organizations shall establish internal environmental responsibilities. All the public and private departments shall pay attention to environmental quality and include environmental problems into their agenda.

Sixthly, the network of policymaking. It is required in ecological modernization process that extensive organizational network shall be established for policymaking to deal with the ecological confrontation and conflicts of environmental policies. The industrial sector, the government, nongovernmental organizations, and the public shall establish a constructive relationship, to lay a foundation of trust and free information exchange for policymaking.

(5) Major Models

First, technological innovation and the superindustrialization. In the early 1980s, Huber (1982, 1984, 1985) published three articles on addressing environmental problems through superindustrialization. In the third article, he proposes ecological modernization as the solution to environmental problems. According to superindustrialization, the transformation of industrial production can be realized by developing and applying better techniques. According to Huber, the governmental interference is limited, so is the impact of environmental movements upon environmental transformation; what is the most important for the transformation required by ecological modernization is the economic sector and entrepreneurs; ecological economy and economic ecology shall be promoted at the same time.

Secondly, social transformation. According to Huber, ecological modernization is an inevitable stage of in the development of industrial society. There are totally three stages: the sprouting of industrial society (1789–1848), the formation of industrial society (1848–1980), and the transformation of industrial society (since 1980). These three stages were all driven by economy and technology. However, the development in the third stage is also driven by the need for coordination between environment and human activities.

According to Janicke (1985) and Simonis (1988), ecological modernization is an inevitable social transformation process. The development of human society can be divided into three stages: the agriculture-based premodern stage, the industrial production-based modernity stage, and the stage of ecological modernity. The third stage is superindustrialization stage, and the closed manufacturing system and advanced environment techniques will repair the design-defect of modern society (Cohen 2000).

Thirdly, the transition of economic structure and ecologicalization of structure. This is the early point suggested by Janicke (1985), Simonis (1989a, b), etc. Structural transformation of national economy, including technological reconstruction and departmental restructure, and ecological transformation of macroeconomic structure, is the core of ecological modernization. Ecological modernization seeks for structural transformation of macroeconomy, high-level economic development, and industrial sector with low-level environmental impact, and particularly the transformation of macroeconomy from energy and resource intensive industry to service and knowledge intensive industry.

Fourthly, the environmental strategy. Ecological modernization is the change of environmental politics, strategies, and polices (Janicke 1985; Hajer 1995). The changed environmental politics is sometimes called political modernization, including the decentralizing, flexible, and consultation-based governmental

management model, with less top-to-bottom command and control; environmental strategies change from remedy strategies to prevention ones; and environmental problems change from the burden of government to major policy topics, with environmental goals integrated into all the governmental policies.

Fifthly, reflexive reconstruction of systems. Ecological modernization is a reflexive reconstruction of system by the modern industrial society to combat ecological crisis (Mol 1995). Such transformation happens in governments and enterprises, with the major aim to combat environmental crisis. Economic systems such as the commodities and labor market, and management systems such as the national government system and the scientific and technological system need ecological transformation, which is the ecological institutionalization of social practices of production and consumption.

Sixthly, the environmental agenda. Ecological modernization is an open, participatory environmental agenda, which means the production, reproduction, discussion, understanding, and acceptance of an environmental thought or notion, which is later turned into a social practice (Hajer 1995).

Seventhly, the model of national capacity (Janicke and Weidner 1997; Andersen 2002). National capacity in ecological modernization, related to national systems and the ability to solve technological problems, depends upon four basic variables: the pressure caused by environmental problems, the ability of consultancy, the ability of innovation, and the effectiveness of strategies.

Eighthly, the model of two categories. Hajer divides ecological modernization into two categories: technology-community ecological modernization and reflexive ecological modernization. The former regards ecological reform as a pure technological and managerial issue, while the latter regards ecological reform as the practice of social learning, cultural politics, and the arrangement of new systems and a democratic process involving the participation of common people.

(6) Actual Effects

Ecological modernization is a theory of environmental sociology which truly reveals the actual progress developed industrial countries have made in environmental reform. So far, developed countries have achieved huge progress in ecological modernization (Pataki 2005).

First, the macroeconomic structure has changed from resource and pollution intensive economic sectors to information and knowledge intensive sectors. It tends to decoupling the connection with energy and material application and move toward a more clean development direction.

Secondly, the government's environmental policies have changed from the model of emergency response, command, and control to one which is participatory and market-oriented.

Thirdly, the environmental awareness of consumers is growing. Their demands affect the operational mode of enterprises.

Fourthly, many environmental nongovernmental organizations change strategies, cooperate with each other to deal with environmental problems, and accept the strategy of reform.

(7) Limits

First of all, European theory of ecological modernization is basically the theoretical description of the environmental reform in Europe, and its international application still needs proof. For example, we should take into consideration factors such as the imperfect democratic system and ecological pressure of agriculture in developing countries which distinguish them from European countries. Secondly, without unified theoretical definition and systematic theoretical presentation, it is not standard or systematic enough. Thirdly, it is still not a mature modernization theory (Seippel 2000); with little connotation in terms of theoretical meaning of modernization, it needs to develop more types, explain more precisely historical phenomena reflected by various kinds of types, and develop more types at the middle level. Fourthly, ecological modernization is only one form of modern social transformation, not all of it.

6.5.2.2 Ecological Modernization Theory in Broad Sense

The ecological modernization theory in broad sense, brought forward by Chinese scholar Chuanqi He, is the extension and application of European theory of ecological modernization in the world and in the modernization sense, and also the application of the second modernization theory in the field of environment. *China Modernization Report 2007: Ecological Modernization Study* (RGCMS 2007) analyzes ecological transformation in the history of human civilization, particularly the period after industrialization, and discusses ecological modernization in Europe and the ecological modernization theory in broad sense. The ecological modernization theory in broad sense includes the general theory, branch theories, and relevant theories (Table 6.65), the first including five aspects such as the definition, process, result, dynamics, and model of ecological modernization (Table 6.66).

(1) Definition

Ecological modernization is the manifestation and ecological interaction and transformation of modernization.

The connotation: ecological modernization is a kind of ecological transformation and international competition of human civilization since the 1970s, including the formation, development, and international interaction of ecological civilization; the innovation, selection, spread, and withdraw of ecological civilization elements; as well as the international competition and stratification to catch up with, reach, and maintain the world's advanced level of development.

The denotation: ecological modernization includes the modernization of ecological behavior, structure, institution, and ideas, includes the modernization of ecological economy, society, politics, culture, effects, and green science and technology, and includes the ecological modernization in different stages, at different levels, and in different fields, subfields, and sectors. It also covers the temporal-spatial distribution change of ecological modernization.

Generally, ecological modernization is the world frontiers of ecological civilization and the process to reach these frontiers and includes the transformation from

Table 6.65 Structure of ecological modernization theory in broad sense

Category	Theory	Main content
General theory	Core theory	Definition, process, result, dynamics, and model of ecological modernization
Branch theories	Stage theory	Ecological modification of first modernization, overall ecological modernization, or integrated ecological modernization
	Stratified study	Ecological modernization at the world, transnational, national, regional, organizational, and individual level
	Subfield study	Ecological modernization in subfields of ecological economy, society, politics, culture, etc.
	Sector study	Ecological modernization in sectors of agriculture, industry, service, transport and energies, etc.
Related theories	Other modernization theories	Reflexive modernization theory, second modernization theory, etc.
	Ecology-related theories	Macroecology, human ecology, environmental science, ecological economy, ecological culture, ecological society, etc.
	Other relevant theories	Organic agriculture, clean production, green energy, green chemistry, green technology, green manufacture, etc.

Note: The theory of overall ecological modernization is an extension of European theory of ecological modernization

Source: RGCMS (2007)

material to ecological civilization, material to ecological economy, material to ecological society, material to ecological politics, and material to ecological culture. It also includes the improvement of ecological quality and effectiveness and the change of ecological structure, system, and ideas, as well as relevant international status.

Modernization and natural environment have always been interacting with each other. In the first modernization process, the interaction is favorable to only one party, with the positive correlation between economic development and environmental degradation, while in the second modernization process, the interaction is mutually beneficial, realizing the win–win result for both economic development and environmental protection.

Ecological modernization consists of four levels of meaning: a historical process, an ecological revolution, an ecological transformation, and international competition. The combination of these meanings may produce multiple operational definitions (Table 6.67).

The basic requirements of ecological modernization are dematerialization, greenization, ecologization, and the gradual decoupling of the connection between economy and environment, or specifically speaking, the dematerialization and greenization of production and consumption, ecologization of economy and society, and the disconnect between modernization and environmental degradation (Table 6.68).

Table 6.66 General theory of ecological modernization in broad sense

Aspect	Basic content
Definition	Ecological modernization refers to the interaction between modernization and natural environment and ecological transformation of modernization; the frontier process of the formation, development, and international interaction of ecological civilization; the process of innovation, selection, spread, and withdrawal of ecological civilization elements; and the international stratification and competition to catch up with, reach, and maintain the world's advanced level of development, etc.
Process	Ecological modernization is a historical process transforming from material to ecological civilization, including the transformation from material to ecological economy, material to ecological society, material to ecological politics, and material to ecological culture, including ecological interaction and transformation, international competition and stratification, as well as the ecological progress and ecologization of economy, society, politics, and culture. It also covers the change of ecological behavior, structure, system, and ideas, as well as the world frontier of ecological civilization and the process of reach world frontier, etc. From the 1970s to the end of twenty-first century, ecological modernization can be divided into the following four stages with 15 major features and ten principles: relatively dematerialization and greening, highly dematerialization and ecologization, a win-win situation for economy and environment, and mutually beneficial coexistence of man and nature
Result	The formation of ecological modernity, particularity, and diversity of ecological modernization. So far, the ecological modernity is featured with the following characteristics: dematerialization, greening, ecologization, the complete decoupling of modernization and environmental degradation, and the mutual coexistence (mutualism) and mutual evolution (coevolution) of man and nature. The basic requirement is the complete delinking of economic growth and environmental degradation and the sound interaction between modernization and natural environment, including profound changes in six aspects
Dynamics	The impetus factors of ecological modernization include quality of life (postmaterial value), ecological safety, knowledge innovation, ecological awareness, movements (civil society) and politics, corporate environmental responsibility, green technological and system innovation, structural dematerialization, internalization of environmental costs, international environmental politics and trade, etc. The drive force mechanism includes innovation drive, three-innovation driving, associative action, complex interaction, innovation spread, innovation spillover, competition drive (Table 2.20), etc.
Model	There are various paths and models for ecological modernization, which depends upon the starting point and path and is affected by the history, geographical conditions, and development level. There are three basic paths in the twenty-first century: overall ecological modernization, integrated ecological modernization, and the ecological modification of classical modernization. Basic models include environmental agenda, industrial ecology, green production and consumption, ecological gardens and zones, green industrialization, green urbanization, etc. Generally, European ecological modernization is more idealistic, North American ecological modernization is more pragmatic, and that of developing countries is more realistic

Source: RGCMS (2007, 2010)

(2) Process

Ecological modernization started from the 1970s, and its frontier track can be divided into four stages (Table 6.69). During the period from the eighteenth to

Table 6.67 Operational definition of general ecological modernization

No.	Definition of general ecological modernization	Characteristics
1.	Ecological modernization is the ecological transformation of modernization, a transition from material to ecological civilization, economy, society, politics, and culture, as well as the change of relevant international status	Emphasis on the process
2.	Ecological modernization is a kind of ecological interaction, and the mutually beneficial interaction and coupling of modernization and natural environment	Emphasis on the interaction
3.	Ecological modernization is an ecological revolution of modernization, including the ecologically reasonable transformation of economy, society, politics, culture, environment, and individual behavior models caused by the overall penetration and wide application of ecology principles	Emphasis on the change
4.	Ecological modernization is a development model, featured with dematerialization, greenization, ecologization, and the win–win situation of economy and environment	Popular definition
5.	Ecological modernization is a historical process where the connection between economic development and environmental degradation is gradually decoupling, and the international competition to catch up with, reach, and maintain the world's advanced level of development	Popular definition

Note: Dematerialization refers to the process of reducing the material and energy density of human activities, such as the dematerialization of production and consumption, etc. Greenization refers to the process of reducing and eliminating the hazards to the environment and human health, to be environmentally acceptable or friendly. Ecologization refers to promoting the ecologically reasonable transformation process of modernization model by adopting the principles of prevention and innovation

Source: RGCMS (2007)

twenty-first century, the frontier process of modernization can be divided into the first and the second modernization, and the latter of which is in accordance with the frontier process of ecological modernization (Table 6.70). However, the ecological effects of these two modernizations are different (Fig. 6.33). The frontier process and catch-up process of ecological modernization process have both common and different features.

Main features of ecological modernization are relatively predictable, global, long-term, complex, progressive, transitional, systematic, gradual, imbalanced, and irreversible world trend, dematerialization, greenization, ecologization, a win–win game for economy and environment, mutualism of man and nature, etc.

Ecological modernization is a part of modernization and follows the ten principles of modernization (Table 2.15). Ecological modernization is relatively independent, with its own basic principles (Table 6.71).

Generally, analysis methods of ecological modernization can be divided into four groups (Table 6.72). First, conceptualization: establishing models of some key concepts in ecological modernization research; second, ecological decision making: relevant models of decision making for ecological modernization; third, systematic adjustment: relevant models of systematic adjustment in ecological

Table 6.68 Basic requirements of ecological modernization

Requirements	Specific content
Dematerialization	High efficiency: improving the productivity of material, resource, energy and land, etc.
	Low cost: lowering economic and social consumption of material, resource, energy and carbon energy, etc.
	High quality: increasing the proportion of service, culture, information, and knowledge in the economy and improving the quality of economy and livelihood
	Low density: lowering economic and social density of material, resource, energy, carbon energy, etc.
Greenization	Toxic free: reducing the production and emission of toxic materials and waste to the environment and human health, detoxification, low-emission and pollution treatment, etc.
	Harmless: reducing the production and emission of harmful materials and waste to the environment and human health, on being harmless, low-emission and environmental treatment, etc.
	Clean: developing environment-friendly technology, clean production, green products, clean energies, green transportation and green lifestyle, lowering emission, etc.
	Healthy: raising the proportion of green elements which are of high quality, eco-friendly, harmless to human body, safe in economy and society, etc.
Ecologization	Prevention principle: developing ecological agriculture, industry, tourism, city and township, and protecting nature and biological resources, etc.
	Innovation principle: eco-friendly knowledge, technological and system innovation, improving ecological effectiveness and ecological culture, etc.
	Recycling economy: raising the rate of recycling, reutilizing, remanufacturing of waste and waste treatment rate, etc.
	Win-win principle: strengthening ecological reconstruction while developing the economy, reducing ecological degradation, the win-win situation for economy and environment, etc.
Decoupling between economy and environment	Decoupling between economy and material: delinking between economic development and the growth of material demands
	Decoupling between economy and resource: delinking between economic development and increasing natural resource consumption
	Decoupling between economy and energies: delinking between economic development and increasing energy consumption
	Decoupling between economy and pollution: delinking between economic development and worsening environmental pollution
	Decoupling between economy and ecological degradation: delinking between economic development and ecological degradation
	Mutually coupling of economy and environment: beneficial coupling of economic development and environmental improvement

Source: RGCMS (2007)

Table 6.69 Four stages of ecological modernization process

Stage	Approx. time	Basic characteristics
Stage I	1970–1990	Pollution treatment, environmental protection, awareness and movement, and relative decoupling between economic development and environmental degradation
Stage II	1990–2020	Relative dematerialization, greenization, ecologization, ecological awareness, and absolute decoupling between economic development and environmental degradation
Stage III	2020–2050	High-level dematerialization, greenization, ecologization, and mutually coupling of economy and environment
Stage IV	2050–2100	A win–win result of modernization and environment, and mutualism and coevolution of man and nature

Source: RGCMS (2007)

modernization process; and fourth, comprehensive evaluation: progress evaluation and supervision evaluation of ecological modernization, etc.

The master equation for environmental pressure is as follows (Tao 2003):

$$I = P \times A \times T$$

$$= \text{Population} \times (\text{GDP/Population}) \times (\text{Environmental Pressure/GDP}).$$

I stands for environmental pressure, P refers to population, A refers to per capita GDP, and T refers to the environmental pressure per unit of GDP.

In the ecological modernization process, green technological innovation, green system innovation, and ecological transition of structure can help ease environmental pressure:

$$I_{\text{ecological modernization}} = I - I_{\text{technological innovation}} - I_{\text{system innovation}} - I_{\text{ecological structure}}.$$

Therefore, we can draw the environmental pressure curve in ecological modernization process as follows (Fig. 6.34).

Ecological modernization requires decoupling between economic growth and environmental pressure, including relative and absolute decoupling.

It is calculated as follows (OECD 2002):

$$\text{DR} = (\text{EP/DF})_{\text{end of the stage}} / (\text{EP/DF})_{\text{beginning of the stage}} \quad \text{DI} = 1 - \text{DR}.$$

DR stands for the decoupling rate, EP refers to environmental pressure indicator, DF refers to the factor of impetus (economic factors), and DI refers to decoupling index.

If DR is smaller than 1, economic growth is decoupled from environmental pressure; if DR is larger than or equal to 1, they are not disconnected.

The economy–environment decoupling index has some limits. For example, it cannot distinguish absolute decoupling from relative decoupling. Given negative growth of national economy, we need to carefully examine the meaning of

Table 6.70 Periodic table of ecological modernization: relationship between civilization and environment

Stage (approx. starting year)	Environmental features of civilization process	Environmental change and modernization process
<i>Age of knowledge civilization</i>		
Transition stage (2050)	<i>Knowledge and ecological civilization and society</i> Mutualism and coevolution of man and nature	Environmental change and modernization process
Mature stage (2020)	High-level dematerialization, greenization, and ecologization	Second modernization and knowledge revolution.
Developing stage (1992)	Moderate dematerialization, greenization, and ecologization	Ecological modernization and revolution; dematerialization, greenization, ecologization, etc.
Start stage (1970)	Relative dematerialization, greenization, and ecologization	
<i>Age of industrial civilization</i>		
Transition stage (1946)	<i>Industrial and material civilization and society</i> Environmental and resources degradation, pollution treatment	First modernization: industrial revolution.
Mature stage (1914)	Industrial pollution, urban pollution, and domestic pollution	Ecological effects: ecological, environmental and resource degradation, infections, etc.
Developing stage (1870)	Industrial pollution, urban pollution, and deforestation	
Start stage (1763)	Industrial pollution, urban pollution, and deforestation	
<i>Age of agricultural civilization</i>		
Transition stage (AD 1500)	<i>Agricultural and material civilization and society</i> Deforestation, land degradation, and local pollution	Agriculturalization: agricultural revolution.
Mature stage (AD 618)	Deforestation, land degradation, and local pollution	Deforestation and land degradation
Developing stage (500 BC)	Deforestation, land degradation, and local pollution	
Start stage (3500 BC)	Deforestation, land degradation, and natural hazards	
<i>Age of primitive culture</i>		
Transition stage (10,000 years ago)	<i>Primitive culture and society, hunting-gathering society</i> Horticulture, animal husbandry, slash-and-burn cultivation	Primitive agricultural revolution Socialization The birth of human beings: tool-making revolution
Mature stage (40,000 years ago)	Hunting-gathering and the impact of using fire	
Developing stage (200,000 years ago)	Hunting-gathering and the impact of using fire	
Start stage (2,500,000 years ago)	Hunting-gathering, etc.	

Note: Ecological revolution refers to profound changes of modernization caused by overall penetration and wide application of ecological principles

Source: RGCMS (2007)

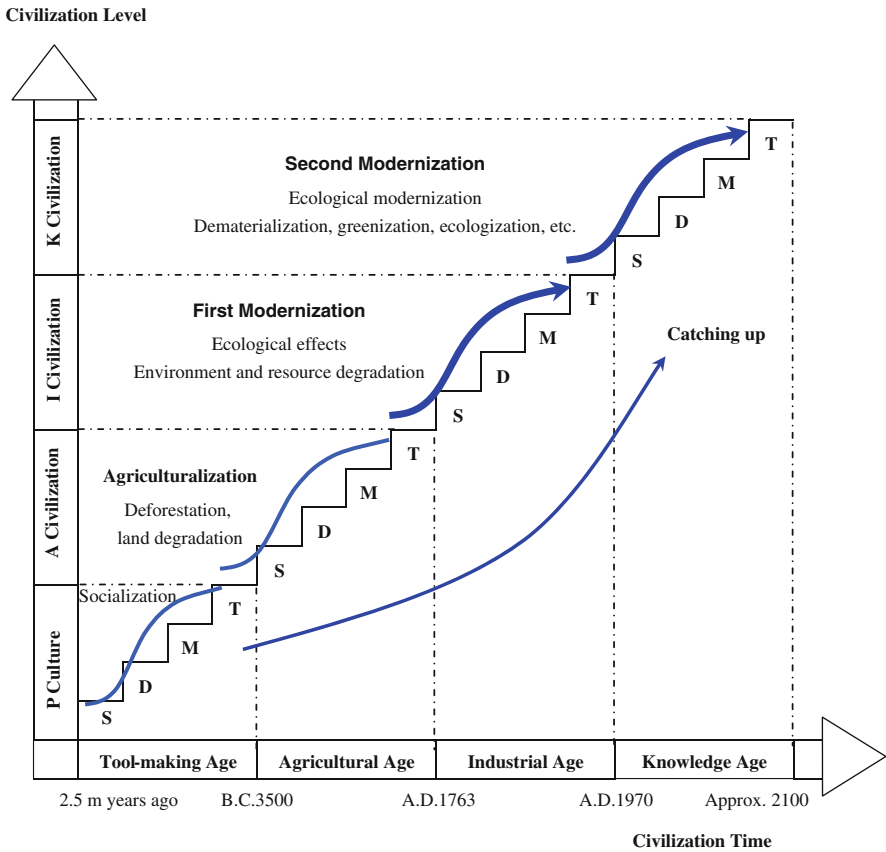


Fig. 6.33 Coordinates of ecological modernization. Note: P, A, I, and K refer to primitive, agricultural, industrial, and knowledge, respectively. S, D, M, and T refer to the start, developing, mature, and transition phase, respectively. The civilization time was the time based on the track of the forerunner of the civilization. Source: RGCMS (2007)

decoupling index. It might be caused by the fact that the influence of resource prices is not reflected, or international trade and environmental pressure transfer, etc. The relationship between economy and environment is more complicated than what the decoupling index shows.

Generally, ecological system is capable of self-adjusting (the ability to recover by adapting itself) which can ease part of the environmental pressure. Ecological construction and environmental protection by human beings can also help ease environmental pressure:

$$I_{ELM} = P \times I_P - E_R - E_P.$$

Table 6.71 Ten principles of ecological modernization

Principles	Basic content
Prevention	Environmental governance combined treatment with prevention and giving priority to prevention
Innovation	Knowledge, technological, and system innovation form the core mechanism to environmental problems
Efficiency	Improving resource and energy utilization efficiency and ecological efficiency are an important approach to solve environmental problems
Unequivalence	Given the same environment, resource, and economic element, their value and meaning vary in different countries and different periods
Dematerialization	Lowering the material and energy consumption and density in economy and society, improving the efficiency and quality of economy and livelihood
Greenization	Detoxification and innocuity of models and structures of production and consumption, economic and social behaviors, reducing waste emission, and applying clean environmental protection
Ecologization	Ecological transformation of models, structures, and systems of production and consumption, economic and social behaviors (prevention, innovation, circulation, and win-win situation)
Democratic participation	Scientific, social, and democratic environmental policymaking
Polluter pays	Internalizing environmental costs, adopting economic means to prevent and control environmental pollution
Win-win situation for economy and environment	Disconnecting economic development and environmental degradation, synchronizing and coordinating economic development and environmental improvement, etc.

Source: RGCMS (2007)

I_{ELM} stands for the environmental pressure of ecological modernization, P refers to population, I_P refers to per capita environmental pressure, E_R refers to the environmental pressure offset by the self-recovery of ecological system, and E_P refers to the environmental pressure mitigated by artificial environmental protection and ecological construction.

Decoupling between modernization and environmental pressure: the increased value of environmental pressure is or smaller than zero:

$$\Delta I_{ELM} = 0 \text{ or } \Delta I_{ELM} < 0.$$

Mutually beneficial coupling of modernization and natural environment: environmental pressure is or approaches to zero:

$$I_{ELM} = 0 \text{ or } I_{ELM} \rightarrow 0.$$

Table 6.72 Analysis methods of ecological modernization

Groups of methods	Content explanation
Group I: Conceptualization	
EM1. Technological classification	Green and white technology, environment friendly, acceptable, harmless technology, etc.
EM2. Product classification	Green and white products, standard products, organic food, etc.
EM3. Consumption classification	Green and white consumption, resource, energy and knowledge intensive consumption, etc.
EM4. Material economic growth model	Three sources of material economic growth: knowledge innovation, application, and ecological awareness
EM5. Ecological value model	The value related to environmental quality in the market demands for better life is ecological value
Group II: Ecological decision making	
EM6. Game model of four sides	Game between green and white producers, green and white consumers for interests
EM7. Game model of two sides	Choice difference of and interests games between poor countries and rich ones
EM8. Production decision-making model	Nine combinations of environmental protection and economic growth
EM9. Consumption decision-making model	Multiple combinations of consumption, income, and environmental protection
EM10. Environmental decision-making model	Decision-making model for environmental protection, design for environment (DfE), Life Cycle Assessment (LCA), etc.
Group III: Systematic adjustment	
EM11. System adjustment model	State identification and feedback adjustment of human ecological system
EM12. Model of EKC and environmental pressure	Model indicating the relationship between EKC, per capita income, and environmental pressure
EM13. Model of material flow analysis	Social metabolism and material flow analysis (including the material flow analysis on toxic and harmful materials) (WRI 2000)
EM14. Environmental management system	Environmental information, organization, individuals, strategies, and operation systems (Huber 2000)
EM15. Structural change model	The change of the proportion of green elements (green production, consumption, and system) and green index
Group IV: Comprehensive evaluation	
EM16. Ecological system evaluation	Ecological system service and state and ecological effectiveness evaluation (MEA 2005)
EM17. Environmental management evaluation	Environmental performance, indicators, policies, and cost–benefit analysis (OECD 2003)
EM18. Index of the decoupling between economy and environment	The change of the ratio of environmental pressure and economic indicators (OECD 2002)
EM19. Model of ecological modernization progress	16 combinations of economic growth and environmental change
EM20. Model of ecological modernization goal	Target function of ecological modernization

Source: RGCMS (2007)

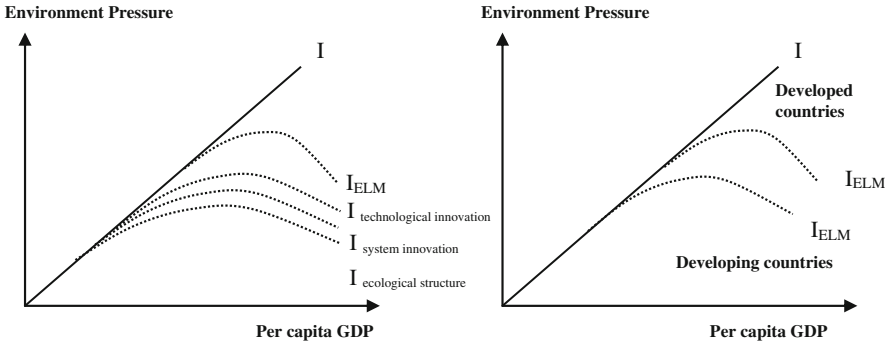


Fig. 6.34 Environmental pressure model of ecological modernization. Note: *I* stands for the environmental pressure of modernization, *I_{E_{LM}}* refers to environmental pressure of ecological modernization (*I_{ecological modernization}*). *I_{technological innovation}* refers to the change of environmental pressure caused by technological innovation, *I_{system innovation}* refers to the change of environmental pressure caused by system innovation, and *I_{ecological structure}* refers to the change of environmental pressure caused by ecological transition of structure. Source: RGCMS (2007)

Equation for the ecological balance of ecological modernization:

$$f(I_P, E_R, E_P) = 0.$$

f stands for function, *I_P* refers to per capita environmental pressure, *E_R* refers to self-recovery of ecological system, and *E_P* refers to artificial environmental protection and ecological construction.

(3) Result

Firstly, the result shows profound changes in the following six aspects: (a) the completion of ecological transformation and the mutualism of man and nature; (b) the improvement of natural environment, minimization of environmental pressure, and environmental friendliness; (c) the improvement of ecological, resource, and energy efficiency; (d) ecological structure and system upgrading to the advanced level; (e) the popularization of ecological concepts; and (f) the change of international status of ecological transformation.

Secondly, the formation of the ecological modernity, particularity, and diversity. So far, ecological modernity is mainly characterized by dematerialization, greening, ecologization, decoupling between modernization and environmental degradation, a win-win game for economy and environment, and mutually beneficial coexistence between human civilization and natural environment. As ecological modernization advances, it will show more new characteristics.

Thirdly, the goal of ecological modernization includes the complete delinking between modernization and environmental degradation, the realization of a

win–win result for economy and environment, and catching up with, reaching, and maintaining the world’s advanced level of development, etc.

Since the 1980s, the result of ecological modernization has been closer and closer to its goal.

(4) Dynamics

Ecological modernization is under the influence of various factors. The factor and the mechanism of drive force can be discussed separately (Table 6.69).

Factors of impetus with relatively important role include the quality of life (postmaterial value), green innovation, ecological awareness, internalization of environmental costs, international environmental politics, international environmental trade, etc.

The mechanism of impetus includes innovation drive (Table 2.20), three-innovation driving (Fig. 6.35), innovation spread (Table 6.69), etc.

(5) Model

There are various paths and models for ecological modernization. There are three basic paths for ecological modernization in the twenty-first century: overall ecological modernization, integrated ecological modernization, and ecological modification of first modernization (Fig. 6.36).

Basic models for ecological modernization in the twenty-first century include the model combining dematerialization, greening, and ecologization; the model combining green industrialization, green urbanization, and ecological transition of structure; and the model combining industrialization, urbanization, environmental management, etc. Models such as environmental agenda, industrial ecology, ecological gardens and green production and consumption can be widely applied.

Generally, European ecological modernization is more idealistic, North American ecological modernization is more pragmatic, and that of developing countries is more realistic.

Branch theories and methods of ecological modernization are discussed in *China Modernization Report 2007: Ecological Modernization Study*.

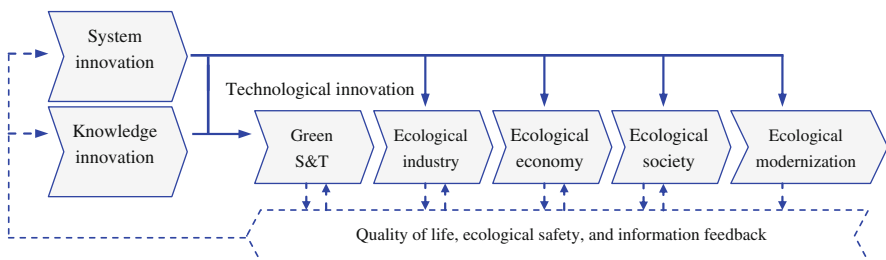


Fig. 6.35 Three-innovation driving model of ecological modernization. Source: RGCMS (2007)

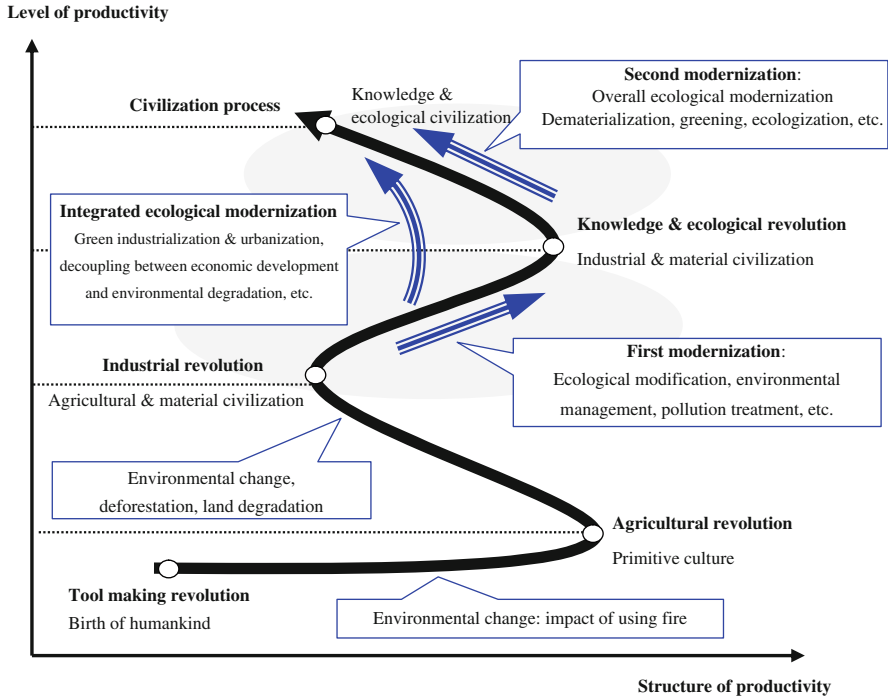


Fig. 6.36 Basic paths of ecological modernization in the twenty-first century. Source: RGCMS (2007)

(6) Integrated Ecological Modernization

Integrated ecological modernization is an option for developing countries and a combination of integrated modernization and ecological modernization. It requires to handle appropriately the relationship between economic development and environmental protection; promote the ecological transformation of modernization while maintaining economic growth; push forward green industrialization, green urbanization, and the ecological transition of structure; ease the environmental pollution and ecological damage caused by agriculture, delinking economic growth from environmental degradation; and catch up with the world’s advanced level of ecological modernization.

The fulfillment of integrated ecological modernization requires three transitions (Fig. 6.37). First, the transition from agricultural to industrial civilization, as required by the first modernization; second, from industrial to knowledge civilization, as required by the second modernization; and third, from material to ecological civilization, as required by ecological modernization. These three turns are required by integrated ecological modernization. Ecological civilization is not only a way of manifesting knowledge civilization but also an important part of it.

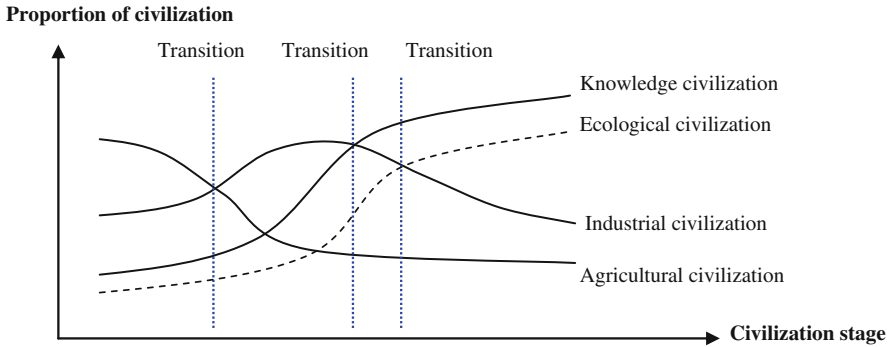


Fig. 6.37 Diagram of integrated ecological modernization (change of civilization structure)

In a sense, ecological civilization is a manifestation of knowledge civilization in terms of civilization–environment relationship.

There are two major challenges for integrated ecological modernization. One is the coupling of integrated modernization and ecological modernization; the reasonable degree of ecological modernization varies in different places and circumstances. The other is the conflict between national and global interests; international environmental politics and environmental trade have both positive and negative effects. In addition, since developed countries did not begin ecological modernization until the completion of first modernization, or the undergoing second modernization, they have less economic pressure but more environmental pressure. However, developing countries which have not completed the first modernization have more pressures on economic development and environmental protection. Therefore, relatively, it is more difficult to realize integrated ecological modernization than overall ecological modernization in developed countries. This is a challenge we have to deal with, which will become more difficult as globalization and international competition intensifies.

6.6 Human Modernization

Human modernization mainly refers to the individual changes of human beings during the modernization process and is one of the manifestations of modernization phenomena. It involves staged and stratified human modernization, human modernization of different type men and sectors, etc. (Fig. 6.38). Men are both the actor and final beneficiary of modernization and are both the object and researcher of modernization study. Human modernization has overlaps with modernization in other fields or levels, especially cultural modernization and individual modernization.

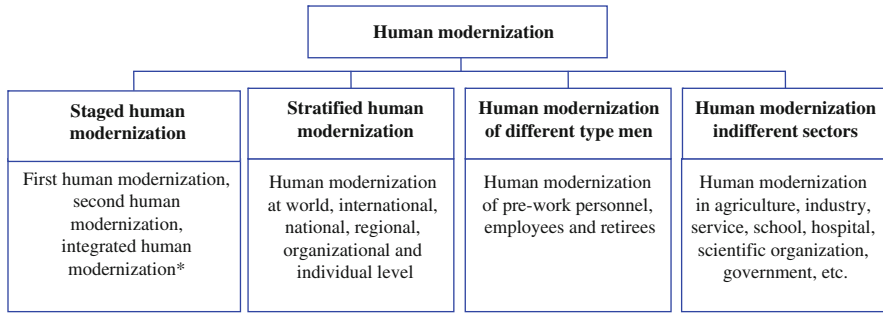


Fig. 6.38 Objects of human modernization study. Note: (*Asterisk*) integrated human modernization, the coordinated development of the first and second human modernizations, is a basic path to human modernization for developing countries

6.6.1 Studies

Human modernization study is part of modernization study concerned with individual behaviors and civic institutions of human beings in the modernization process. It can be dated back to the early eighteenth century and analyzed from the three aspects of the past, the present, and the future.

6.6.1.1 Research Paradigm

The human modernization research mainly targets at the individual and civic systemic changes of the humankind during the modernization process, including modernization of prework personnel, employees (workers engaged in material production, providing service, and knowledge workers), and retirees and individual modernization at six levels; the research contents include modernization of human behaviors, qualities, systems and ideas, the process, result, dynamics, and models of human modernization. They constitute a structure matrix (Table 6.73). Its research objects also include staged and sector-related human modernization.

Human modernization study, one kind of modernization study, could adopt the methodologies of modernization study. It has a variety of analysis methods, such as time-series analysis, cross-sectional analysis, process analysis, social survey, case study, coordinate analysis, etc. The research can span the whole process of human modernization or part of the period. The scope of research could be the world, a country, or a region.

(1) Historical Facts

Human modernization includes the changes of human behavior, qualities, institutions, and ideas in the process of modernization. Generally, changes of human behavior and qualities are individual changes, while institutional changes are social changes, the changes of the institutions concerning human behavior and development; changes of ideas are both individual and social changes.

Table 6.73 Matrix of human modernization study

Content		Object		
		Human being	Pework personnel, material product workers, service workers, knowledge workers, and retirees	World, international, nation, region, organization, and individuals
		Human modernization	Human modernization of five types of people	Human modernization at six levels
Element	Behavior	Modernization of human behavior, quality, institution, and ideas	Modernization of behavior, quality, institution, and ideas of five types of people	Modernization of human behavior, quality, institution, and ideas at six levels
	Quality			
	Institution			
	Idea			
Aspect	Process	Process, result, dynamics, and model of the human modernization	Process, result, dynamics, and model of modernization of five types of people	Process, result, dynamics, and model of human modernization at six levels
	Result			
	Dynamics			
	Model			

Note: Human qualities refer to the overall qualities of men, including physical qualities, psychological qualities, scientific literacy, cultural literacy, labor and life skills, etc. Human institutions refer to a variety of institutions concerning human behavior and development, such as the institution of civil rights and obligations. Based on the natures and characteristics of different jobs, the employees could be divided into three categories: material product workers refer to the employees mainly engaged in physical labor sectors such as agriculture and industry, service workers are those engaged in traditional service sector, and knowledge workers are those engaged in knowledge production and services (He 2000a). The research contents of human modernization also include staged human modernization, sector-related human modernization, frontier analysis, trend analysis, frontier process analysis, and the interaction between elements of human modernization and different fields, etc.

Between the eighteenth and the twenty-first centuries, the frontier track of modernization could be divided into two stages and six waves of development. The intension and characteristics of modernization vary a lot in different stages and waves of development, so do its influence and demands on people. In different stages and waves of development, human modernization is provided with varied intension and characteristics (Table 6.74). Though the cut-off points for the two stages and six waves of development are not definite, it is acceptable to use them as the analysis framework in this study.

(2) Process Analysis

First of all, the first wave of human modernization. Paralleled with the first industrial revolution, it took place in European countries and essentially involved emancipating the mind, advocating freedom, equality, humane and commercial spirit, participating in political activities, and developing citizens’ legal and political rights, etc., as demonstrated by the *Declaration of the Rights of Man and Citizen* (1789) in France, religious secularization and freedom of belief, etc.

Secondly, the second wave of human modernization. It took place during the second industrial revolution and the World War I and World War II and extended to

Table 6.74 Two stages and six waves of human modernization

Wave	Approx. time	Main content	Annotation
First	1763–1870	Primary education, citizenship, secularization, legal rights, political rights	<i>First human modernization</i> Citizenship, professionalization, secularization, equalization, democratization, etc.
Second	1870–1945	Compulsory education, professionalization, liberalization, political rights, social rights	
Third	1946–1970	Secondary education, equalization, democratization, social rights, participation rights	
Fourth	1970–2020	Higher education, networking, internationalization, ecological awareness, participation rights	<i>Second human modernization</i> Networking, ecologization, knowledge, individualization, internationalization, etc.
Fifth	2020–2050	Lifelong learning, individualization, innovation, longevity, nature awareness	
Sixth	2050–2100	Knowledge sharing, experience, transcendentalization, diversity, universe awareness	

Note: Different stages and waves of development of human modernization have overlaps in the contents. The fifth and sixth waves of modernization are a forecast

broader areas—Europe, America, and Asia. It is mainly characterized by professionalization, rationalization, liberalization, democratization, class differentiation, politicalization, economization, mechanization, compulsory education, industrialism, the development of political and social rights of citizens, and so on.

Thirdly, the third wave of human modernization. It roughly occurred in the third industrial revolution, including human modernization in industrialized countries and developing countries. Human modernization in industrialized countries was the heart of the third wave. The major contents include equalization, democratization, electrification, socialization, television, secondary education, the development of social and participation rights of citizens, and so on.

Fourthly, the fourth wave of human modernization. Propelled by information and ecological revolution, it generally parallels with the fourth wave of modernization and covers most regions around the world. Its contents mainly include networking, knowledge, internationalization, ecologization, individualization, higher education, civil rights and obligations, participation rights, and all-round development of mankind.

Fifthly, the fifth wave of human modernization. As forecasted, it will be set in a bioeconomic society and mainly characterized by lifelong learning, leisure, innovation, longevity, and nature awareness.

Sixthly, the sixth wave of human modernization. As forecasted, it will be set in a cultural economic society and mainly characterized by knowledge sharing, experience, transcendentalization, diversity, universe awareness, and so on.

(3) Human Modernization and Civil Rights

Civil rights serve as the institutional basis for human modernization. The development of civil rights is a substantial facet of human modernization. Janoski (1998) believes that, *the history of civil rights' development during the past hundreds of years could be divided into three periods: 1200–1815 for legal and political rights; 1789–1980 for legal and political rights; 1883–1990 for social and participation rights; it does not mean that any of these rights does not evolve in other periods, but respectively, they mostly grow in one of the periods* (Janoski 1998).

Generally, civil rights and obligations should be well balanced (Table 6.75). The civil rights and obligations in different countries and stages bear varied intensions. *Liberalism countries follow the order of legal, political and social rights successively. Legal and political rights have been developed from an early age but social and participation rights are generally lagged behind. Democratic countries firstly develop legal rights, then political and social rights concurrently, and participation rights lastly. In traditional countries, social rights are developed very early, but legal and political rights fall far behind* (Janoski 1998).

In the latter half of the twentieth century, civil rights drew much attention from the international community, and both international conventions and contracting states were on the rise (Table 6.76).

(4) Human Modernization and Human Development

Freedom, liberation, and all-round development of humankind are examples of the key goals of human modernization. UNDP had published *Human Development*

Table 6.75 Civil rights and obligations

Legal rights	Political rights	Social rights	Participation rights
Personal safety and rights	Individual political rights	Capacity promotion rights	Labor market intervention
Judicial and procedural rights	Organization rights	Opportunity rights	Suggestion/decision-making rights
Expression and selection rights	Membership rights	Distribution rights	Capital supervision
Property and services rights	Objection rights	Compensation rights	
Legal obligations	Political obligations	Social obligations	Participation obligations
Interpersonal obligations: respecting human rights, etc.	Interpersonal obligations: respecting democracy, etc.	Obligations on health and disease prevention	Obligations of the labor market
Organization obligations: respecting laws, etc.	Organization obligations: observing the regulations and laws, etc.	Obligations on opportunity creation	Obligations of enterprises/administrative organs
Compulsory obligations: paying taxes, etc.	Compulsory obligations: military services, etc.	Economic obligations: job-hunting, etc.	Obligations on capital participation

Source: Janoski (1998), Isin and Turner (2002)

Table 6.76 Conventions concerning culture, labor, and civil rights by international organizations

Name	Time	Contracting states	Name	Time	Contracting states
International Convention on the Elimination of All Forms of Racial Discrimination	1965	161	Convention concerning Freedom of Association and Protection of the Right to Organize**	1948	139
International Covenant on Civil and Political Rights	1966	148	Right to Organize and Collective Bargaining Convention**	1949	151
International Covenant on Economic, Social, and Cultural Rights	1966	145	Convention concerning Forced or Compulsory Labor**	1930	160
Convention on the Elimination of All Forms of Discrimination Against Women	1979	168	Abolition of Forced Labor Convention**	1957	155
UN Convention Against Torture	1984	128	Convention concerning Equal Remuneration for Men and Women Workers for Work of Equal Value**	1951	156
UN Convention on the Rights of the Child	1989	191	Convention concerning Discrimination in Respect of Employment and Occupation**	1958	154
Convention on the Prevention and Punishment of the Crime of Genocide	1948	118	Minimum Age Convention**	1973	138
Convention relating to the Status of Refugees	1951	112	Convention on the Worst Forms of Child Labor**	1999	116
Convention against Discrimination in Education*	1960	79	Indigenous and Tribal Peoples Convention**	1989	9
Convention concerning the Protection of the World Cultural and Natural Heritage*	1972	154	Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property*	1970	94

Note: Those marked with “*” are international conventions of UNESCO; the number of contracting states is calculated up to the year 2000. Those marked with “**” are international conventions of International Labor Organization. Others are UN’s human rights conventions; the number of contracting states is calculated up to the year 2002

Source: UNDP (2002), UNESCO (2000)

Report since 1990, which analyzed issues on human development from different perspectives and proposes measurement methods—such as indicators of human development (UNDP 2000, 2001).

UNDP believes: *human development refers to the process of deepening the degree and enlarging the extent of development so as to enlarging people's choices. Therefore, human development also reflects the achievements people have made in terms of full development and extent of development. It is both a process and a goal. The three most basic requirements for human development are: health and longevity, being knowledgeable, and the access to resources needed for a decent life (UNDP 2000).*

UNDP has successively developed human development index (HDI), gender-related development index (GDI), and human poverty index (HPI), etc., to measure the achievements of human development. HDI is the measure of the average accomplishments in the three basic aspects of human development: health and longevity, knowledge acquired, and a decent life. GDI is the measure of gender differences in human development in a country and the indication of the progress in gender parity. HPI is the measure of the poverty in human development and the indication of the distribution of human development progress. UNDP also brought forward the world table of Human Development, which analyzes the worldwide progress and distribution of human development, including democracy and participation, economic equality, health and education, peace, and individual safety (UNDP 2002).

Inglehart and Welzel (2005) believe that *contemporary social change is part of human development process, leading to the development of humanistic societies, which highlight freedom and self-expression. Human development could be divided into three dimensions: socio-economic dimension, cultural dimension and institutional dimension. The core of human development result is the increase of choices and autonomy for mankind. The spread of self-expression values brings about the transition from modernization process to human development process, and displays humanistic transition of modernity.*

In *China Modernization Report 2010: World Modernization Outline 1700–2100*, Chinese scholar Chuanqi He proposes new human development indexes (HDI_N). He believes that the emergence of information and ecological revolution and knowledge economy has changed and will continue to change the lifestyle and basic concepts of people. HDI suggested by UNDP does not involve indicators on information and environment, and its knowledge indicator does not show the highlights.

HDI_N measures the average achievements in five basic aspects of human development of a country: (1) long and healthy life, indicated by life expectancy at birth; (2) universal higher education, indicated by the enrollment rate of universities and colleges; (3) information sharing, indicated by Internet penetration rate; (4) environmental improvement, indicated by sanitary wastewater treatment rate; and (5) wealthy life (or high-quality life), indicated by purchasing power per capita [*GDP per capita* calculated based on PPP (*Purchasing Power Parity*)]. Achievements in every aspect are shown by the figures between 0 and 100; the HDI_N is the average of the indexes in the five aspects (Table 6.77).

Table 6.77 Human development indexes and new human development indexes of four groups of countries in 2005

Country	HDI	HDI _N	Life	Education	Information	Country	HDI	HDI _N	Life	Education	Information
AC											
USA	0.96	74	78	82	70	Philippines	0.74	29	71	28	5
Japan	0.96	65	82	55	67	South Africa	0.68	22	51	15	8
Germany	0.94	68	79	50	65	China	0.76	29	73	20	9
France	0.96	63	80	56	43	Morocco	0.64	27	71	11	15
UK	0.96	71	79	59	65	Egypt	0.78	29	70	35	12
MC											
Argentina	0.86	46	75	64	18	India	0.60	18	64	11	4
Uruguay	0.86	42	76	42	20	Kenya	0.53	12	53	3	3
Czech	0.89	52	76	48	32	Nigeria	0.50	14	47	10	4
Poland	0.87	50	75	64	35	Nepal	0.54	14	63	6	1
Chile	0.87	44	78	48	22	Burundi	0.38	8	49	2	0

Note: HDI stands for human development index and HDI_N new human development index. Life refers to the average life expectancy at birth, education refers to the enrollment rate of higher education, and information refers to the penetration rate of Internet. AC refers to advanced countries, MC moderately developed countries, PC preliminarily developed countries, and UC underdeveloped countries

Source: RGCMS (2010)

6.6.2 Theories

Human modernization theory, concerned with human modernization phenomena, is a field theory of modernization science. It is generally comprised of two sets of theories: the classic human modernization and the human modernization theory in broad sense. It has overlaps with cultural modernization theory, social modernization theory, and individual modernization theory as well as behavioral psychology.

6.6.2.1 Classic Human Modernization Theory

Classic human modernization theory is an important part of classic modernization theory formed in 1960–1980. It is sometimes called behavioral psychology school of classic modernization theory. The publication of American scholars, *The achieving society* (McClelland 1961), *Becoming Modern: Individual Change in Six Developing Countries* (Inkeles and Smith 1974), and *Exploring Individual Modernity* (Inkeles 1983), marked the birth of the classic human modernization theory. Up to now, it is only the mixture of different academic thoughts, without any systematic, agreed general theoretic elaborations.

(1) Definition

Uniform definition on human modernization has not been provided. Generally, human modernization refers to the transition from traditional men to modern men, including the modernization of personality, psychology, individual behaviors, values, etc.

American scholars Inkeles and Smith (1974) believe that *in any society and at any age, man is the most basic element of modernization process. Only when the citizens make psychological and behavioral transitions to form their modern personalities, the employees in political, economic, scientific and technological, educational and cultural institutions could develop modernity in their personalities, and the society would be thus called a modern society. If the people of a country lack wide-ranging and modern psychological elements to equip the advanced institutions with vitality, and if the people who dominate and operate the advanced institutions have not achieved transition to modernity in their psychology, thoughts, attitudes and behaviors, then failure and deformed development will be inevitable.*

(2) Outcome

The formation and diffusion of human modernity is the major outcome of human modernization.

Professor Inkeles (1966) concludes nine psychological features of a modern man. *First, readiness for new experiences and openness to innovation and change; second, active-minded, forming and expressing opinions over a wide range of issues in surrounding environment; third, present or future-oriented rather than indulging in the past; fourth, confident in man's capabilities to control the environment and fulfill his goals; fifth, managing affairs in a planned and organized way; sixth, trusting in the society and other people; seventh, distribution equality; one's reward should have positive correlation with one's skills and contribution to the*

organization; eighth, ambitious, willing to receive formal education and learn scientific knowledge; ninth, aware of and respecting the dignity of others.

Inkeles and Smith (1974) believe that, *modern personality mainly consists of four traits: participatory and well-informed; efficient; displaying a strong sense of independence and autonomy under the influence of traditions, especially while making decisions on personal affairs; open-minded, ready to take in new experiences and concepts and cognitive flexible.*

Kahl (1968) has researched and found out the seven core factors of modernity, namely, activism, low integration with relatives, preference to urban life, individualism, low community stratification, and low stratification of life chances. According to Black (1976), compared with the past, modern people are more open and tolerant, care more about the domination on the environment, and do not rest on their laurels.

(3) Human Modernity and Economic Development

According to McClelland (1961), *that economic development is closely related with the “need for achievement” which in turn is closely related to values, faith and ideology. In western industrialized countries, the themes on ambition and desire for achievement frequent the reading materials and fairy tales for children and primary school students, but relatively fewer in developing countries. A boy’s need for achievement would be influenced by three factors: parents’ high achievement standards, warmth and encouragement, and an unauthoritarian father. The society with higher achievement need would produce more energetic entrepreneurs, who will push forward the economic development more rapidly.*

6.6.2.2 Human Modernization Theory in Broad Sense

The human modernization theory in broad sense is developed for interpreting the human modernization during the eighteenth to the twenty-first centuries. Proposed by Chinese scholar Chuanqi He, it is the application of the second modernization theory in the field of individual behaviors. It consists of general theory, branch theories, relevant theories, etc. (Table 6.78). Here we highlight its general theory (Table 6.79), including the definition, process, result, dynamics, and model of human modernization.

(1) Definition

Human modernization is one of the manifestations of modernization and refers to the frontier changes of human development and relevant factors during the process of modernization.

The intension: human modernization refers to a frontier change and international competition in the field of human development since the eighteenth century, including the formation, development, transformation, and interaction of modern people; innovation, selection, diffusion, and withdrawal of individual elements and civil systems; and the international competition, differentiation, and stratification to catch up with, reach, and maintain the world’s advanced level of human development.

Table 6.78 Structure of human modernization theory in broad sense

Category	Theory	Main contents
General theory	Core theory	Definition, process, result, dynamics, and model of human modernization
Branch theories	Stage theory	First, second, and integrated human modernization
	Stratified study	World, international, national, regional, organizational, and individual human modernizations
	Field-related study	Human modernization in the fields of economy, society, politics, culture, and environment
	Sector study	Human modernization in the sectors of agriculture, industry, education, science and technology, national defense and transport, etc.
	Type-related study	Modernization of knowledge workers, service workers, and material products workers
Related theories	Other modernization theories	Classic modernization theory, ecological modernization theory, and the second modernization theory
	Relevant theories of praxiology	Individual ethology, behavioral psychology, developmental psychology, the achievement motivation theory, and the need-hierarchy theory
	Other relevant theories	Modernism, postmodernism, sociology, economics, politics, culturology, etc.

The extension: human modernization includes modernization of human behaviors, qualities, institutions, and ideas; modernization of personality and psychology; modernization of prework personnel, employees, retirees, and male and female citizens; modernization of material products workers, service workers, and knowledge workers; staged, stratified, and sector-related human modernization; the interplay between human modernization and modernization in other fields; and changes in spatial and temporal distribution of human modernization, etc.

Generally, human modernization refers to the self-liberation and all-round development of human beings, and the world frontiers of human development and the process to reach these frontiers, and includes the transition from traditional to modern men and from modern men to postmodern men, improvement in citizens' qualities and capacities, development of civil rights and obligations, changes in human lifestyles, behavioral models and values, etc.

Throughout the history of human civilization, there have been three self-liberations of mankind (Table 6.80). The first human modernization is the liberation from religion and feudal autocracy; the second human modernization is the liberation from the control by organization and machine.

Human modernization is the intersection of individual changes and modernization. Human modernization refers not only to the personal changes of people but also to the changes of the institutions and environment where they live. Without modernization of institutions and environment, human modernization would be hard to achieve. During the process of modernization, the three elements—human, institution, and environment—could promote or restrain each other.

Table 6.79 General theory of human modernization in broad sense

Item	Main content
Definition	Human modernization refers to a frontier change and international competition in the field of human development since the industrial revolution in the eighteenth century; the frontier process of the formation, development, transformation, and interaction of modern people; the complex and alternate process of innovation, selection, diffusion, and withdrawal of individual elements, civil systems, and ideas; and the international stratification and competition to catch up with, reach, and maintain the world's advanced level of human development
Process	Human modernization is a long-term process and involves the development, transformation, interaction of humans, and the change in international status, including economization, socialization, politicalization, individualization, diversification, and all-round development of humankind, the world frontiers of human development and the process and action to reach these frontiers. The human modernization during the first modernization is named the first human modernization for short. It refers to the transition from traditional to modern men, which is mainly characterized by citizenship, professionalism, rationalization, equalization, economization, and socialization; the gradual formation of individual behaviors, qualities, capacities, institutions, and ideas that fit in with industrial civilization. The human modernization during the second modernization is called the second human modernization for short. It refers to the transition from industrial to knowledge men. It is characterized by the networking, ecologization, diversification, individualization, innovation, and intellectualization; the gradual formation of individual behaviors, qualities, capacities, institutions, and ideas that fit in with knowledge and ecological civilization. The coordinated development of first and second human modernizations leads to integrated human modernization
Result	Human modernity, particularity, diversity, self-liberation, and all-round development of human beings. The outcome of the first human modernization is the formation of the first human modernity, particularity, and diversity; the first human modernity is mainly characterized by citizenship, professionalism, equalization, discipline, responsibility, and individual values, etc., with human indifference as its side effect. The outcome of the second human modernization is the formation of the second human modernity, particularity, and diversity; the second human modernity is mainly characterized by networking, ecologization, autonomy, internationality, sense of happiness, and self-realization, with the increase of risks as its side effect
Dynamic	The impetus at the microlevel includes innovation, competition, adaptation, exchange, individual benefits, personal interests, etc.; impetus at the macrolevel involves national and regional modernization, informatization and globalization, etc. The dynamic models consist of innovation drive, dual-wheel motivation, associative action, diffusion of innovation, spillover of innovation (Table 2.15), etc. Different types of people at different ages in different stages have varied impetus for modernization
Model	Human modernization has no standard paths or models, relies on the starting point and the paths, and is influenced by history and traditions, cultural concepts, public opinions, educational level, national strength, and international situation. Three paths are available in the twenty-first century: the first human modernization, the second human modernization, and the integrated human modernization

Source: RGCMS (2010)

The conceptual model for human modernization (Table 6.81). First of all, human development is the intersection of individual progress, institutional development, and environmental improvement. Secondly, human modernization is the intersection of human development, transition, and interaction.

Table 6.80 Three self-liberations of mankind

Item	First	Second	Third
Time	3500 BC–AD 1763	Approx. 1763–1970	Approx. 1970–2100
Content	Liberation from natural food dependence	Liberation from religion and feudal autocracy	Liberation from the control by organization and machine
Outcome	Became food producer and got rid of the dependence upon nature	Became citizens with independence, freedom, and equality	Become world citizens with individuality and independence
New control	Religion and feudal autocracy	Control by organization and machine	Earth's check upon mankind
Note	Birth of civilization	First human modernization	Second human modernization

Table 6.81 Conceptual model for human modernization

Item	Main contents
Hypothesis I	Individual progress refers to the enhancement of individual qualities and capacities and the gradual conformity of individual behaviors and ideas with the needs of modernization
Hypothesis II	Institutional development refers to the rationalization and modernization of the relevant systems on civil rights and obligations
Hypothesis III	Environmental improvement refers to the modernization in economy, society, politics, and cultural environment for individual life
Hypothesis IV	Human transformation refers to the transition from traditional to modern men and from modern men to postmodern men
Hypothesis V	Human interaction refers to the interpersonal interaction and the interplay between man and nature as well as international competition
Inference I	Human development = individual progress × institutional development × environmental improvement
Inference III	Human modernization = human development × human transition × human interaction and change of status

(2) Process

Human modernization is a long-term process. The process of human modernization can be divided into two types: frontier process and catch-up process with both common and different features. During the eighteenth to the twenty-first centuries, its frontier process could be divided into two stages: first modernization and second modernization (Table 6.82), which have different intensions (Fig. 6.39).

The first human modernization is the transition from traditional to modern men, from agricultural to industrial men, from men of ethics to men of covenant, from familial to social men, from stratified to equal men, from *monarch–subject relationship to state citizens, from rural people to urban residents, etc.*

The second human modernization refers to the transition from modern to postmodern men, from industrial to knowledge men, from economic to ecological men, from material to cultural men, from men under organization to men with autonomy, from men of nationality to men of the world, etc.

Table 6.82 Periodic table of human modernization—frontier track of individual changes

Stage (approx. starting year)	Form and features of human changes (key points)	Human modernization
<i>Knowledge age</i>		
	<i>Men in the knowledge society (knowledge men and netizen)</i>	
Transition stage (2050)	Knowledge men: experience, diversification, knowledge sharing	<i>Second human modernization</i>
Mature stage (2020)	Knowledge men: leisure, innovation, lifelong learning	Networking, knowledgezation, individualization; men of culture, men of the world, postmodern men
Developing stage (1992)	Netizen: Internet, internationalization, intellectualization	
Start stage (1970)	Ecological men: ecologization, individualization, higher education	
<i>Industrial age</i>		
	<i>Men in the industrial society (industrial and modern men)</i>	
Transition stage (1946)	Modern men: equalization, socialization, secondary education	<i>First human modernization</i>
Mature stage (1914)	Modern men: politicalization, democratization, compulsory education	Citizenship, professionalism, equalization; rational men, social men, modern men
Developing stage (1870)	Industrial men: professionalism, class differentiation, rationalization	
Start stage (1763)	Economic men: citizenship, secularization, liberalization	
<i>Agricultural age</i>		
	<i>Men in agricultural society (agricultural and traditional men)</i>	
Transition stage (AD 1500)	Traditional men: familial, predestinate, rural	(Men of a nationality, men of social ranks, men of ethics)
Mature stage (AD 618)	Traditional men: religious, hierarchical, conservative	(Agricultural revolution, stratification of men)
Developing stage (500 BC)	Men of agriculture: monks and priests, aristocrat, the commons, warrior	
Start stage (3500 BC)	Men of a family: slave owner, slave, the commons, warrior	
<i>Primitive age (tool age)</i>		
	<i>Men of the primitive society (primitive men, tribal men)</i>	
Transition stage (10,000 years ago)	Primitive men: patriarchal tribes	(Primitive agricultural revolution, stratification of men)
Mature stage (40,000 years ago)	Primitive men: maternal tribes	
Developing stage (200,000 years ago)	Primitive men: clans	(Tool-making revolution, birth of mankind)
Start stage (2,500,000 years ago)	Primitive men: migration	

Note: The time of chronology and the features were based on the frontier track of the human development

Social Level

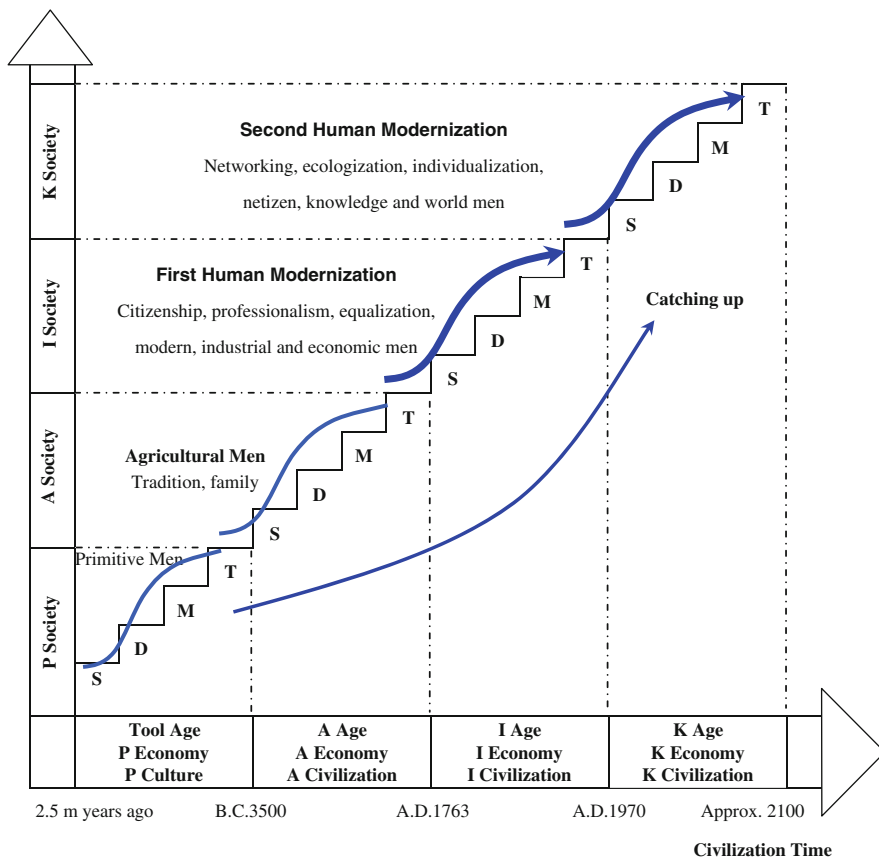


Fig. 6.39 Coordinates of human modernization. Note: P, A, I, and K refer to primitive, agricultural, industrial, and knowledge, respectively. S, D, M, and T refer to the start, developing, mature, and transition phase, respectively. The civilization time was the time based on the track of the forerunner of the civilization

Table 6.83 Staged features of human modernization

Characteristics of the first human modernization	Characteristics of the second human modernization
Stratification, citizenship, professionalism, rationalization, class differentiation, secularization, equalization, economization, politicalization, socialization, etc.	Networking, ecologization, internationalization, diversification, automation, individualization, leisurization, innovation, knowledgization (new characteristics will continue to emerge in the future)

The first and second human modernizations have different characteristics (Table 6.83); the characteristics of the second human modernization are still evolving.

There are ten general characteristics of human modernization: partly predictable, nonlinear, reversible, path dependent, multipath, polynary, unbalanced, asynchronous, staged, and global.

Human modernization, one of the manifestations of modernization, follows the ten principles of modernization (Table 2.15).

(3) Result

The outcomes of human modernization include human modernity, particularity, diversity, and side effect (Table 6.82). Theoretically speaking, it involves profound changes in six aspects: the completion of two human transitions, the improvement of individual qualities and capacities, the changes of individual values, the development of civil institutions, freedom and liberation and all-round development of mankind, changes in the distribution of human modernization, and so on.

The outcomes of the first human modernization refer to the first human modernity, particularity, and diversity, and it is mainly characterized by professionalism, citizenship, rationality, equality, class nature, democracy, organization, efficiency, openness, independence, participation, planning, actuality, equity, initiative, mobility, science, discipline, sense of responsibility, trust, achievement, individual values, etc., and the side effects such as indifference and the popular materialism.

The outcomes of the second human modernization refer to the formation of the second human modernity, particularity, and diversity, and it is mainly characterized by knowledge, networking, ecology, autonomy, diversity, interest, internationality, sense of happiness, lifelong learning, self-realization, and all-round development at present, and the side effects such as expedited aging of knowledge and skills, and the increase of risks in jobs and families, etc.

From the individual perspective, human modernization mainly has three goals: the completion of the first human modernization and the second human modernization and to catch up, reach, and maintain the world's advanced level in citizen qualities and human development.

From the perspective of policy, human modernization has three goals: to fully enhance citizen qualities and the all-round development of mankind, develop and improve the institution on civil rights and obligations, and boost the creativity of the citizens and the international competitive edge, etc.

Since the 1960s, the relevance between the outcome and the goal of human modernization has been gradually formed and enhanced while modernization study moves forward.

(4) Dynamics

Drive forces of human modernization include macro- and microfactors. Innovation is the fundamental source of institutional progress; competition, the motivation mechanism of individual progress; adaptation, individual and institutional adjustment to changes of external environment; exchange, a motivator of human development; and individual benefits and interests, a factor influencing individual development. In developed countries, innovation and competition play a more prominent role, while in developing countries, exchange and adaptation are more

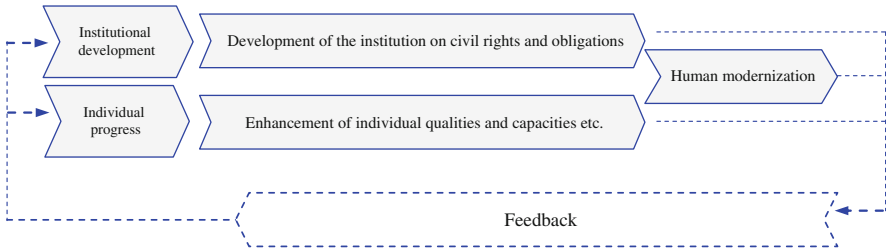


Fig. 6.40 Dual-wheel motivation model of human modernization

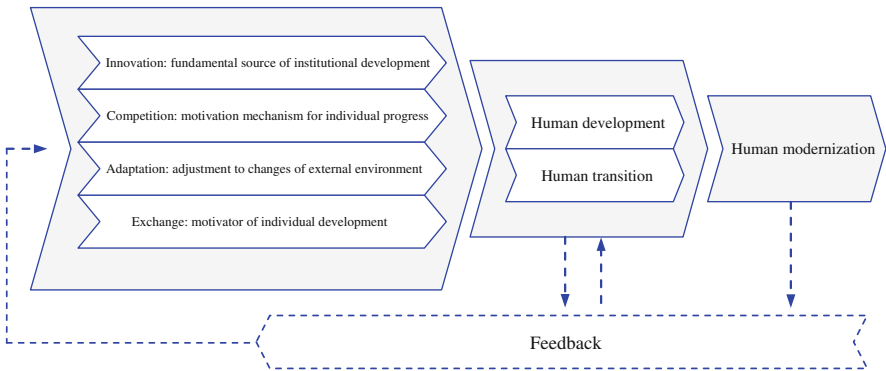


Fig. 6.41 Associative action model of human modernization

significant. Models of impetus include dual-wheel motivation (Fig. 6.40), associative action (Fig. 6.41), etc.

(5) Model

There is no best path universally applied to human modernization in the world. There are basically three paths for human modernization in the twenty-first century (Fig. 6.42).

If the first human modernization is the primary human modernization, then the second human modernization is the advanced human modernization; the coordinated development of the two human modernizations and the continued transitions to man of knowledge, cybercitizen and man of ecology would result in the integrated human modernization.

There is no standard model for human modernization, which is under the influence of traditional culture, occupation, and objective conditions.

Generally, the contents and models differ in different stages, fields, and sectors of human modernization.

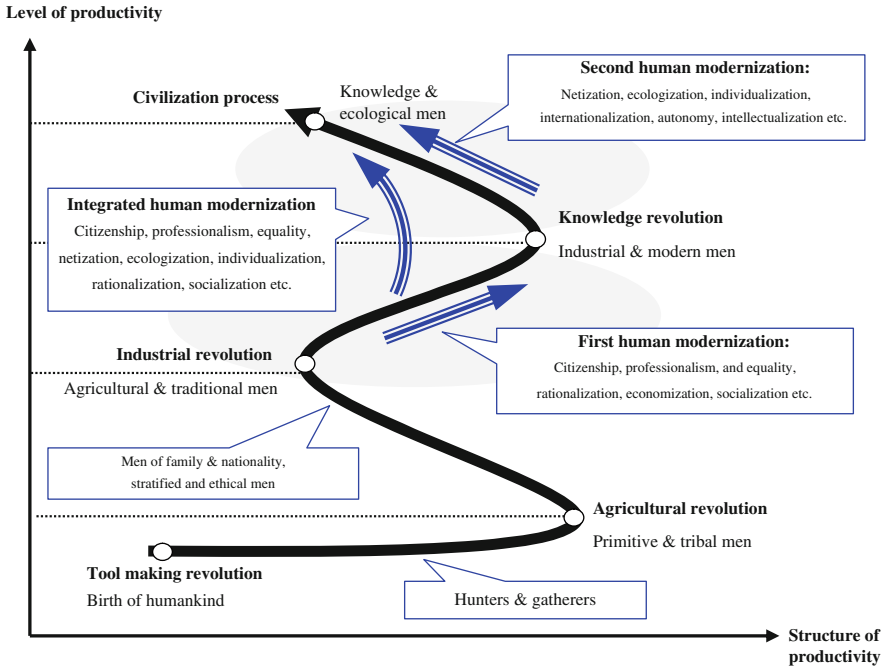


Fig. 6.42 Three paths of human modernization in twenty-first century. Note: under the influence of Internet, ecologization, etc., the first human modernization in the twenty-first century will develop new characteristics

Summary

Modernization occurs in all spheres of human civilization, such as the spheres of economy, society, politics, culture, ecology, and human development. Modernization in different spheres has both commonality and difference. Country is the basic unit for modernization, and modernization of each sphere is closely related with modernization of a country as a whole.

Economic Modernization

Economic modernization means the modernization of the economic sphere. Economic modernization theories include classic economic modernization theory and broad-sense economic modernization theory. The former is a branch of classic modernization theory, and the latter is an application of the second modernization theory in the economic sphere.

The economic modernization theory in broad sense holds that economic modernization is a sort of economic change and international competition since the industrial revolution in the eighteenth century; a frontier process of the formation,

development, transformation, and international interaction of modern economy; a compound process of the innovation, selection, diffusion, and withdrawal of economic factors; and the international economic competition, differentiation, and stratification to catch up with, reach, and maintain the world's advanced level of the economic development. It includes the transition from agricultural to industrial economy and the transition from industrial to knowledge economy, the increasing of economic efficiency and per capita income, and the change of economic welfare and equity, national economic status, and international economy system.

Generally, economic modernization refers to the world frontiers of economic change and the process to reach the frontiers. During the eighteenth to twenty-first centuries, the frontier process of economic modernization can be divided into two stages.

First economic modernization refers to the transitions from agricultural to industrial economy and from self-supporting to market economy, etc. Its unique features included industrialization, mechanization, electrification, automation, standardization, scale operation, marketization, centralization, deagriculturalization, etc. Its results were the formation of first economic modernity, particularity, and diversity and the side effects such as environmental pollution and cyclic economic crises. The main marks for the completion of first economic modernization were the finish of industrialization and marketization and economic efficiency and per capita income reaching the advanced level of industrial economy (the average level of industrial countries in the 1960s).

The second economic modernization is the transitions from industrial to knowledge economy and from material to ecological economy, etc. Currently, its unique features include intellectualization, informatization, servicization, intelligentization, ecologization, globalization, greenization, dematerialization, decentralization, deindustrialization, etc. Its results are the formation of the second economic modernity, particularity, and diversity and the side effects such as network crimes and international economic risks. The main marks for the completion of second economic modernization are the realization of intellectualization and ecologization, and the level of productivity and per capita national income reaching the advanced level of knowledge economy (at some points in the future).

Integrated economic modernization is a basic path for developing countries in the twenty-first century. It comprises the coordinated development of the twice economic modernizations and the continuous movement toward knowledge economy and the coordinated development of the industrialization, deindustrialization, intellectualization, informatization, greenization, and globalization of national economy and the continuous movement toward intellectualization and greenization.

In the twenty-first century, economic modernization has roughly three basic paths. The path of the first economic modernization corresponds to the model of industrialization; the path of the second economic modernization corresponds to the model of information economy, ecological economy, biological economy, experience economy, etc.; and the path of integrated economic modernization corresponds to the model of new industrialization, including the coordinated

development of industrialization, de-industrialization, intellectualization, informatization, and ecologization. Different models have many submodels.

Social Modernization

Social modernization means modernization of the social sphere. Social modernization theory includes classic social modernization theory and social modernization theory in broad sense. The former is a branch of classic modernization theory, while the latter is an application of the second modernization theory in the social sphere.

The social modernization theory in the broad sense believes that social modernization is a sort of social change and international competition since the industrial revolution in the eighteenth century. It is the frontier process of the formation, development, transformation, and international interaction of modern society; a compound process of the innovation, selection, diffusion, and withdrawal of social factors; and also the international social competition, differentiation, and stratification to catch up with, reach, and maintain the world's advanced level of social development. It comprises the transition from agricultural to industrial society and from industrial to knowledge society, the improvement of social effectiveness and quality of life, the change of lifestyle and living ideas, the enhancement of civic quality of culture and health, and the change of social welfare, equity, and international social status.

Generally, social modernization refers to the world frontiers of social change and the process to reach the frontiers. During the eighteenth to twenty-first centuries, the frontier process of social modernization can be divided into two stages.

The first social modernization is a transition from agricultural to industrial society and from familial to welfare society, etc., and its features include urbanization, welfarism, mobility, specialization, rationalization, electrification, technologization, equity, social differentiation and integration, universal primary education, and so on. Its result was the formation of the first social modernity, particularity, and diversity, and its side effects include the widening gap between the rich and the poor, etc. The completion of the first social modernization was mainly marked by the competition of urbanization, welfarism and social efficiency, and life standard reaching the advanced level of industrial society (the average level of industrial countries in the 1960s).

The second social modernization is a transition from industrial to knowledge society and from material to ecological society, etc. Currently, its features include intellectualization, informatization, suburbanization, urban-rural balance, greenization, ecologization, naturalization, innovation, internationalization, diversification, individualization, leisure, rights of women and children, universal higher education, lifetime learning, and so on. Its results are the formation of the second social modernity, particularity, and diversity, and its side effects include the information divide, etc. The completion of the second social modernization is mainly marked by the completion of intellectualization, greenization, and social effectiveness and quality of life reaching the world's advanced level of knowledge society (at some points in the future).

Integrated social modernization is a basic path for developing countries in the twenty-first century. It comprises the coordinated development of the twice social modernizations and the continuous transition to knowledge society and the coordinated development of urbanization, suburbanization, welfarism, intellectualization, informatization, and greenization and the continuous transition to intellectualization and greenization, etc.

Social modernization has roughly three basic paths in the twenty-first century. The path for the first social modernization corresponds to the model of urbanization and welfarism, the path for the second social modernization corresponds to the model of intellectualization and greenization, etc., and the path for integrated social modernization corresponds to the model of new urbanization, including the coordinated development of urbanization, suburbanization, welfarism, intellectualization, informatization, greenization, etc.

Political Modernization

Political modernization refers to modernization in the political sphere. The theory of political modernization includes classic political modernization theory and political modernization theory in broad sense. The former is a branch of classic modernization theory, while the latter is the application of the second modernization theory in the political sphere.

According to the political modernization theory in the broad sense, political modernization refers to a sort of political change and international competition since the industrial revolution in the eighteenth century; the frontier process of the formation, development, transformation, and international interaction of modern politics; the complex process of the innovation, selection, diffusion, and withdrawal of political factors; and the international political competition and stratification for catching up with, reaching, and maintaining the world's advanced level of political development. It includes the transition from traditional to modern politics and from modern to postmodern politics. It also involves the rational and democratic political power, legislative and equal political participation, institutional and professional political system, and rational and efficient political behaviors.

Generally, political modernization refers to the world frontiers of political change and the process to reach the frontiers. From the eighteenth century to twenty-first century, the frontier process of political modernization can be divided into two major stages.

The first political modernization refers to the transition from agricultural to industrial politics, from authoritarian to democratic politics, from familial to civil politics, etc. Its features include democratization, rationalization, secularization, systematization, rule of law, bureaucratization, professionalization, class-stratified, concentration, etc. Its result is the formation of first political modernity, particularity, and diversity, with the side effect of political corruption. The major indicator of the completion of the first political modernization is the formation of democratic, free, equal, and efficient modern politics.

The second political modernization refers to the transition from industrial to knowledge politics, power-oriented to service-oriented politics, material to ecological politics, etc. Currently, it is featured with networking, knowledgeablization, service-based, greenization, diversification, internationalization, topic-related and opening politics, individualized and scattered politics, etc. Its result is the formation of the second political modernity, particularity, and diversity, with the side effect of decreasing political credit. So far, the second political modernization has not been fully rolled out.

Integrated political modernization is a basic path for the developing countries in the twenty-first century, including the coordinated development of the twice political modernizations and the shift toward knowledge-based politics. It requires the simultaneous promotion of the two political modernizations, including democratization, rationalization, systematization, professionalization, knowledge-based, networking, diverse and green politics, etc.

In the twenty-first century, there are three basic paths and several specific subpaths for political modernization. The basic paths include the path of the second political modernization, the first political modernization, and the integrated political modernization, with several subpaths under each. There are four subfields in the political sphere (political participation, national governance, international politics, and political environment), each of which follows a specific path of modernization, with the three basic paths being their envelope.

Cultural Modernization

Cultural modernization refers to the modernization in the cultural sphere. The theory of cultural modernization includes classic cultural modernization theory and cultural modernization theory in broad sense. The former is a branch of classic modernization theory, while the latter is the application of the second modernization theory in the cultural sphere.

According to the cultural modernization theory in broad sense, cultural modernization refers to a sort of cultural change and international competition since the Enlightenment in the eighteenth century; the frontier process of the formation, development, transformation, and international interaction of modern culture; the complex process of the innovation, selection, diffusion, and withdrawal of cultural factors; and the international cultural competition and stratification for catching up with, reaching, and maintaining the world frontier status of cultural change. It includes the transformation from traditional to modern culture and from modern to postmodern culture, the improvement of cultural creativity and the quality of cultural life, the development of cultural facilities and cultural industries, the self-emancipation and all-round development of mankind, etc.

Generally, cultural modernization refers to the world frontiers of cultural change and the process to reach the frontiers. During the period from the eighteenth century to the twenty-first century, the frontier process of cultural modernization can be divided into two major stages.

The first cultural modernization refers to the transition from agricultural to industrial culture, including the transition from authoritarian to democratic culture, from feudal to civic culture, from superstitious to scientific culture, from dependent to professional culture, from familial to welfare culture, from rural to urban culture, and so on. Its features include cultural differentiation, specialization, professionalization, rationalization, secularization, commercialization, scientific and personalized culture, etc. Its result is the formation of the first cultural modernity, particularity, and diversity, with the side effect of weakening humanity. The major indicator of the completion of the first cultural modernization is the formation of modern industrial and democratic culture.

The second cultural modernization refers to the transition from industrial to knowledge culture, including the transition from material to ecological culture, from entity to cyber (virtual) culture, from authoritative to civil culture, from machine to humane culture, from national to global culture, from cultural convergence to diversity, and so on. Currently, it is featured with the dedifferentiation of culture, cultural industrialization, networking, digitalization, ecologization, democratization, humanity, plurality, diversification, globalization, etc. Its result is the formation of the second cultural modernity, particularity, and diversity, with the side effect of Internet dependency, etc. The second cultural modernization is the world frontier of cultural modernization which has not been accomplished yet.

Integrated cultural modernization is a basic path for the developing countries. It is the process of the coordinated development of the twice cultural modernizations and the continuous shift toward knowledge culture. Its contents include the cultural industrialization, cultural diversity, networking, professional and scientific culture, democratic, rational and green culture, and so on.

There are three basic paths for cultural modernization in the twenty-first century: the first cultural modernization, the second cultural modernization, and the integrated cultural modernization. There is no standard model for cultural modernization. We have to choose the model rationally. There might be different models of success or failure in different countries or regions and in different stages of cultural modernization, which latecomers can study and learn from.

Ecological Modernization

Ecological modernization refers to the ecological interaction and transformation of modernization since 1970. The theory of ecological modernization includes European ecological modernization theory and ecological modernization theory in broad sense. The former, a theory of environmental sociology, was generated in the 1980s, while the latter was the application of the second modernization theory in the field of natural environment.

According to ecological modernization theory in broad sense, ecological modernization is the interaction and mutual coupling of modernization and natural environment and refers to the ecological transformation and international competition of modernization; the frontier process of the formation, development, and

international interaction of ecological civilization; the complex process of innovation, selection, diffusion, and withdrawal of factors of ecological civilization; and the international competition and stratification for catching up with, reaching, and maintaining the world's advanced level of ecological civilization. It includes the transition from material to ecological civilization, economy, society, politics, and culture, and also the improved ecological quality and efficiency, and the change of ecological structure, institution, and ideas, as well as relevant international status. Ecological modernization is the intersection of ecological improvement, ecological economy, ecological society, international competition, and the change of relevant international status.

From the 1970s to the end of the twenty-first century, the process of ecological modernization can be divided into four stages: dematerialization and greening, hyperdematerialization and ecologization, win-win game for economy and environment, and the mutualism and coevolution of men and nature.

Ecological modernization follows the following ten principles: prevention, innovation, efficiency, unequivalence, dematerialization, greenization, ecologization, democratic participation, polluter pays (internalization of environmental cost), and the win-win game for economy and environment.

The result of ecological modernization is the formation of ecological modernity, particularity, and diversity. Currently, the features of ecological modernity include dematerialization, greening, ecologization, and the absolute decoupling between modernization and environmental degradation, and the mutual coexistence and coevolution of men and nature. The basic requirements are the absolute delinking between economic growth and environmental degradation and beneficial interaction between modernization and natural environment.

The result of ecological modernization is demonstrated by the profound changes in the following six aspects: first, the completion of ecological transformation and the mutualism of man and nature; second, the improvement of natural environment, the minimization of environmental pressure, and environmental friendliness; third, the increasing of ecological efficiency and the decreasing of resource and energy density; fourth, the upgrading of ecological structure and system; fifth, the popularization of ecological consideration; and sixth, the change of the international status of ecological transformation.

There are three basic paths for ecological modernization in the twenty-first century: comprehensive ecological modernization, integrated ecological modernization, and the ecological modification of the first modernization. The basic models of the ecological modernization in the twenty-first century include the model combining dematerialization, greenization, and ecologization; the model combining green industrialization and urbanization and ecological transition of structure; and the model combining industrialization, urbanization, and environmental management. Models which can be widely applied include environmental agenda, industrial ecology, ecological garden, green production and consumption, etc.

Human Modernization

Human modernization refers to the human changes during the modernization process, including individual progress, institutional development, environmental improvement, and so on. The theory of human modernization includes classic human modernization theory and human modernization theory in broad sense. The former is a branch of the classic modernization theory, while the latter is the application of the second modernization theory in the field of human behaviors.

According to the human modernization theory in broad sense, human modernization refers to the frontier change and international competition in the field of human development since the eighteenth century; the frontier process of the formation, development, transformation, and interaction of modern men; the complex process of the innovation, selection, diffusion, and withdrawal of human factors and civil systems; and the international competition differentiation and stratification for catching up with, reaching, and maintaining the world's advanced level of human development.

Generally, human modernization refers to the self-emancipation and all-round development of mankind and the intersection of individual progress, institutional development, and environmental improvement. It includes the transition from traditional mankind to modern mankind and from modern mankind to postmodern mankind, the improved quality and capabilities of citizens, the development of the rights and obligations of citizens, and the change of individual lifestyle, behavior model and values.

Human modernization includes the world frontiers of human development and the process to reach the frontiers in general. From the eighteenth century to the twenty-first century, the frontier process of human modernization can be divided into two major stages.

The human modernization in the first modernization process is known as the first human modernization for short, including the transition from traditional to modern men. It is mainly characterized by citizenship, professionalization, rationalization, equalization, economization, socialization, politicalization, the emphasis upon accomplishment and individual values, and the gradual adaption of individual behavior, qualities, capabilities, systems, and ideas to the industrial civilization. Its result is the formation of the first human modernity, particularity, and diversity, with the side effect of indifference between people, etc.

The human modernization in the second modernization process is known as the second human modernization for short. Currently, it is characterized by the networking, ecologization, diversification, personalization, internationalization, innovation, knowledgization, the emphasis upon happiness and self-realization, and the gradual adaption of individual behavior, qualities, capabilities, systems, and ideas to knowledge and ecological civilization. Its result is the formation of the second human modernity, particularity, and diversity, with the side effect of increasing risks, etc.

There are three paths in the twenty-first century: the first human modernization, the second human modernization, and integrated human modernization.

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