



Systems Analysis of Globalization

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Abstract

At the time of globalization, people begin to scan and consider global problems, seek the global strategies to solve these problems and adopt corresponding global actions. People are taking the global system as the understanding object and the rebuilding object. When the global system occurs in human views, the proper understanding tool is needed to help us observe and consider it. The system theory is thus an understanding tool. The idea and method of the system theory can be utilized to research and explain the phenomenon of globalization, and as a result, to discover and find the essential and rule of globalization. This article will analyze the structure of global system, the attributes of global system, the governance of global system, the state of global system and the evolution of global system.

Keywords: Globalization, System theory, Science analysis

Human has entered into the time of globalization, and people begin to consider global problems, seek the global strategies to solve these problems and adopt corresponding global actions, all that indicates that people are taking the global system as the understanding object and the rebuilding object. The global system is the sign of the globalization time. When the global system occurs in human views, the proper understanding tool is needed to help us observe and consider it. The system theory is thus an understanding tool. The system theory is the combination of natural science and the human social science, and it possesses wide theory development and actual application foreground when breaking human subjective localization and solving important problems faced by human. "The system theory reflects the trend of modern science development, the character of modern social production, and the complexity of modern social life, so its theory and method can be extensively applied (Hu, 2007, P.30)". The process of system analysis to globalization is the process to scientifically understand the global system. The idea and method of the system theory can be utilized to research and explain the phenomenon of globalization, for the purpose of discovering discover and finding the essential and rule of globalization. This article will analyze the structure of global system, the attributes of global system, the governance of global system, the state of global system and the evolution of global system, and express the author's individual opinions related to the topic of globalization.

The existing base is to utilize the idea and method of the system theory to study and explain social phenomena. On the one hand, scientists' researches about the system include not only the natural system but the social system. As for the complex adaptive system universally existing in the nature and human society, Johan H. Holland applied himself to seek the common principle, he pointed out that "we have seen that the harmony and the durative of every system all depend on the extensive reciprocity, the assemble of multiple elements and adaptability. We also notice that many confused problems such as center downfall, AIDS, lunacy, degradation, and the durative of biology system in modern society would continually exist until we really understand the mechanism of these systems (John, 2000, P.4)". On the other hand, modern sociologists have begun to use the opinion of the system theory to establish the social theory and study the social problems. "After the middle period of the 20th century, the functionalism becomes the leading research view in the sociology. One famous modern sociologist is Talcott Parsons who was the most important theorist in the study of functionalism. The functionalism which often occurs together with the evolutionism is the first theoretical visual angle in the sociology. Through treating the society as some basic systems, the functionalism theory offers a sort of approach to study the complex social system. Every part in the society is regarded as the system with certain "function", or certain influences to fulfill certain basic demand. In this way, we can find how the subsystem implements its influence, which can explain the existence and operation of the system. This sort of theoretical explanation has many problems, but at least, the functionalism offers programs to describe the largely complex system (Jonathan, 2006, P.34)". Another modern socialist is Luhmann who had studied from Parsons for a time and surpassed his teacher. "The most important system theorist in the sociology is Niklas Luhmann. Luhmann developed the research method of sociology combining Parsons' structure function theory and the common system theory, and introduced the concepts of cognitive biology and artificial intelligence (George, 2005, P.85)". For two scholars, the former didn't name the theory with system, but based

on the system theory, and the latter not only named the theory with system, but also based on the system theory. Facing the problem of globalization, we should go along with both sociologists' roads and continually develop and explore the new field of the system theory.

1. Structure of global system

The structure of any system is represented as two main aspects including composition and relationship.

The global system is a multiple structured system, and according to the decomposition from the top to down, it contains the human social system and the natural environment system. The human social system contains the political system, the economic system, the law system, the military system, the religion system, the media system, the information system, the education system, the literature system, the sanitation system, and the physical system and so on. The natural environment system contains the atmosphere system, the ocean system, the land system and the biology system. At the time of globalization, the global system has entered into human cognitive view. Before the time of globalization comes, the global system has already existed actually all along, but it didn't enter into human cognitive view. At the globalization time, the global system has achieved the high-level degree, and its structure is increasingly complex. But before the globalization time comes, the global system was in the low-level degree and its structure is relatively simple in the human first and consideration.

In human brains, the most striking hypo-subsystem of the global system is the independent country distributed according to the geography, and the country possesses the highest dominion recognized by human, but the human recognized global dominion surpassing the country has not come into being. So the global system is still the system with loose structure to this day. In fact, every country is the system with compact structure. Whether the global system can be evolved to the system with compact structure which is similar to the country is still an unknown, and if possible, what conditions should be possessed or when the required conditions can be possessed is also an unknown.

The opened loop is a character of the global system structure. Back to the natural state, the global system is not the system designed by human, and it is the system occurred spontaneously with the activities that human explore and understand the nature, and adapt and rebuild the nature. Up to now, the global system is still an opened loop system without complete feedback mechanism. Human has not possessed the sagacity and ability to design the global system. In uncertain future time, human may independently design the global system, and make it self-correct and self-perfect, and change the global system as a closed loop system with complete feedback mechanism.

The expansion is another character of the global system structure. Historically, the global system was in the continuous course of expansion in all ages, and the extensive contents of expansion involves many aspects including the expansion of main body scale, the expansion of self system, the expansion of ability and energy, and the expansion of exterior influence. No one knows whether this expansion would bring advantage or disaster, and whether it is an infinite expansion with far foreground or a expansion approaching the limitation gradually, and whether the human rational selection is to continually push this expansion or stop this expansion.

“The complexity of the system is the problem about the quantity of composing factors and the diversity, and the problem about the organizational structure and the refinement of operation correlation (Nicholas, 2007, P.8)”. The individual is the components with the least particle level in the human social system, and the most advanced and complex single biological system evolved from the nature. The organizational configuration and the correlation in the interior middle level of human social system suddenly enhance the quantity of the complexity. “The world that we live in is a large complex system, and the complexity of the nature is infinite (Nicholas, 2007, P.1-2).” According to the human existing knowledge level, the global system possesses the complexity which can not be described and expressed, and any language glossary, mathematical formula, and topology figure about the complexity can not really and clearly reflect the complexity possessed by the global system. “Not any one formula or blueprint can fully expatiate on the complexity of human condition (Mel, 2000, P.306).” At present, the global system faced by human is the system with highest level complexity in all human repositories. For the composing element, composing unit, interior relationship and exterior relationship of the global system, no one can give scientific and rational explanations. “The cognitive management and practical management of the complexity are the topic to challenge the world, and the globalization is one part of the problem and its solution. Philosophers try to but hardly solve various puzzles induced by the complexity in the modern world (Nicholas, 2007, P.7).”

The stability is one important character which can reflect the state and configuration of system with the time on the structure. The system with stable state and configuration on the structure possesses relatively stable composition and relationship, and various components and various relationships are combined together, and the system possesses the function force and the support force needed to sustain the structure state and configuration, and various function forces and support forces are balanced each other. The stability of global system is weak, and the crisis and threat which induce the collapse of global system structure not only exist but increasingly deteriorate. Two world wars in the 20th century and continual local wars are examples that part of human has gotten in insanity and inhumanity in spite of

themselves, and the knell of unstable global system. "When the homicide machine in the world becomes more and more crazy, we must solve the problem how to prevent war in order to defend modern civilization and avoid it become human abattoir. Few people would publicly like war and everyone would complain the costs of war (Sidny, 2006, P.176)." Those nuclear missile weapon repertoires established in the half of the 20th century in the name of defending national security and exerting top scientific technologies indicated that the ability that human destroy themselves had completely exceeded the suicidal measurement standard. "The arguments about nuclear weapon had early arouse human dread to the suicidal fearful foreground, and after the Chernobyl Accident, this dread was first concreted (Beck, 2000, P.202)." The ecological environment destruction in the process of universally developing national economy indicated that the behaviors of human destroyed homes and dig their own graves were not controlled effectively. "The terms such as greenhouse effects, is relative to atmosphere change, pollution, forest denudation, unbalanced increase of population, the species annihilation of numerous propagations, inundantly destructive potential, the political and economical mechanism with many limitations, and impertinent attitudes and expectations are always put forward by people (Skirbekk, 2007, P.57)." The population boom have made the earth unable to bear the burdens. "If we don't take actions right now, we will not hold the present earth any longer, but a piece of deserted land with over ten billion populations. The earth can not support ten billion people, at last come to destruction. Wars or diseases such as AIDS and innutrition will threaten the whole unstable society (E. G. Nisbet, 2001, P.336)." Therefore, the global system is not a stable system or it has not possessed enough stability.

The relationships of mutual acceptance, mutual benefit and complementation are represented as the harmony of system. The harmony of global system is being constructed, and this is a long process evolved from the out-of-order direction to the order direction. If this process can be realized, it will reduce the probability of intense concussion and the interior energy consumption, which can increase not only the microcosmic individual freedom but the stability of macrocosm. Contrary to the harmony expected by human, "the conflict theory sets out a picture full of blood and fire, which includes race conflict, national conflict, culture conflict, civilization conflict, and anarchy that the whole world gets in. Conflict theorists hold pessimism to the future globalization, but some problems they emphasize are quite urgent, especially for many developing countries. These problems not only threaten the peace of some countries and areas, but are important obstacles to the peace and development of the whole world (Yang, 2002, P.52-54)." The consequent is that any system lacks the harmony is very serious, and the global system is not the exception. "Just as what we see, the modern global crisis contains many dangerous seeds including admittedly genocidal possibility. However, from another view, every danger may contain opportunities to exceed and change crisis (Mel Gurtov, 2000, P.98)." The settlement of global crisis needs to establish the harmony of global system including the global harmony concept and the global harmony mechanism. Because the main body of human is first the human of individual, then the human of family, the human of region (clan, village, city), the human of nation, and the human of country in turn, and the basic area of human thinking span is [the human of individual, the human of country], so the main body of human universally possesses the limitation of recognition and the limitation of benefit. These limitations on cognition and benefit are essential reasons to seriously obstruct the construction of the harmony of global system.

2. Attributes of global system

The emergence is the most important attribute of system. Experts scientifically explain the emergence of system. "Bertalanffy emphasizes that any system is an organic unity, and it is not mechanical composition or simple addition of various parts, and the unitary function of system is the character which each factor can not show. This character becomes the headword of research in systematic science, i.e. the emergence, that is the new unitary character (the emergence phenomenon) large of systematic components produced in their mutual communications, and the emergence can not be explained reductively, i.e. it can not be explained by the sum of parts (Hu, 2007, P.29)." The emergence of global system is more and more notable. Many global systems faced by human are the necessary reflection of the emergence of global system. Individual, nation and country are components of global system, and the relationships among their wills, behaviors and the state of global system are not linear relation but nonlinear relation. Various behaviors of individual, nation and country induce the global system to get into the bad mess that any individual, nation and country would not see. The emergence is reminding human that global threat doesn't come from the exterior but the interior, and the local doings are the root to induce the unitary collapse.

The layer property of system is one of dimensions of system attribute. The global system a multiple structured system and every structure possesses its special layer division. The layers of human social system are mainly the layers presented in the form and scale of organization, and the layers of natural environment system are mainly the layers presented in the space distribution, extents and kinds. The political system, economic system, law system, military system, religion system, media system, information system, art system, sanitation system, physical system in the human social system respectively have different layer divisions of organizational forms and scales. The atmosphere system, ocean system, land system and biology system in the natural environment system respectively have different layer divisions of organizational forms and scales. The most basic layer of the human social system are millions human, the layer with highest governance influences is hundreds of countries, and the layer approaching the peak includes UN and

its affiliated international organizations. Other special layers still need to be deeply researched continually.

The association of system is also one of dimensions of system attribute. Generally speaking, the association exists in various components of system, and it also exists in system layers. Especially the importantly, the association exists in multiple structures of global system. The association can be divided into different types according to function, effect, state and time, for example, the good association and bad association, the adaptive association and antipathy association, short-term association and permanent association, discontinuous association and sequent association. Human only knows a little of the complex interior association of global system, and it is almost impossible to adjust these associations only in virtue of wisdom and conscience. The association of global system is still in the free stage, and it is unknown whether it can go into the stage of consciousness. The association also includes strong association and weak association. The history of global system is the history of association from weak association to strong association. Fatedly, there exists a threshold value of association intension, and when the interior association intention of global system overstep this threshold value, human began to realize the coming of the globalization time.

The unity of system is also one of dimensions of system attribute. "The core idea of the system theory is the unitary concept of system (Hu, 2007, P.29)." With the increasing frequencies of communication over the limitations and obstacles among various continents, regions, oceans and cultures in the human society, the global system only emerges increasingly as a unity. Developed and modern global traffic network and global communication network are pulses and arteries linking the global system as the unity. As viewed from the system association, the close association of various components of global system makes it complete the construction of unity formation. However, the construction of unitary consciousness and unitary thinking is groping in the dark. As a whole, the global system has a complete body, but lacks a suit of value concept and behavior rule with complete matching and healthy sense. The cognition of the unity of global system needs standing on a very special angle to observe and consider, i.e. exceeding the individual position, class position, national position and country position everyone can depend on to exist, and just like the earth can not overcome the gravitation of earth, few people can break away from the position gravitation of the society, so few people can observe and consider the global system from the exceeded angle. In fact, this exceeded angle can not be achieved by any human. Even if human can think of it, they can only adopt the thinking method of dummy reality to make them stand on this exceeded angle to observe and consider the unity of the global system.

3. Governance of global system

"One of direct results brought by the development of globalization is the increase of contradictions between the global problems and the deficiency of existing political entity management ability, so it is a very actual and urgent problem of how to mobilize the forces in the world to solve global problems (Yang, 2002, P.194)." The actuality of global system governance is that each does things in his own way. Supposed that the human society can start unprecedented development project of global system and seek the development approach changing the actuality, we must solve a series of basic problems of global system governance. "The challenges faced by human are not opposite each other, but it is whether we can establish a sort of world governance to stop conflicts and solve conflicts, in spite of the fact whether these conflicts are economic, commercial, cultural and military (J. Orstrum Mdlar, 2003, P.14)." This sort of world governance is the governance of global system.

The historical course puts forward the demand of global system governance in modern times. "The former UN secretary-general U Thant firstly put forward the pressure of security for the global countermeasures: I don't want to romance and exaggerate, but according to the information obtained as the UN secretary-general, I can make such conclusion, i.e. the member countries of UN may establish a sort of global fellowship to stop arms race, improve the environment of human inhabitation, reduce population boom and offer needed tendency for the development when putting the arguments for a long time in ten years. If this sort of fellowship can not be constructed in the coming ten years, I am very worried about the above problems that will develop to very serious degree until it can not be controlled. This secretary-general's warning called the turn unfortunately. Though our planet is not destroyed so far, but the depth and extension of those problems put forward by U Thant certainly have developed the degree that we almost can not control (Mel Gurtov, 2000, P.4)." Other scholars also hold same opinions and express same worries. "We have controlled our home, and human is blindly reining the earth. Without the cognition and percipience to the future, one collision will destroy us, so we should stop and repair our steps. If we study to govern, we can go through the solar system in virtue of our civilization. And if we don't study, what we leave to the biosphere probably is only the relic of earth after we dispose (E. G. Nisbet, 2001, P.354)."

The next problems of global system governance are who should govern, what governance organization should be established, what governance object and governance mode should be confirmed, and what strategy and method should be adopted to govern. On the existing level of human civilization advancement, these problems must be vexed. The important point to research in these problems is in the process but not the result. Up to now, "the world society is the 'society' without world country and world administration (Beck, 2000, P.31)." Accordingly, the global system is the "system" without global country and global administration. There is not convinced answer for the problem whether the

world country and the world administration or the global country and the world administration should be established. Through further researches to the global system governance, experts and scholars can exert various methods to rationally design and scientifically demonstrate the future ideal society for the human. But in actual actions, "we must utilize various political actions to realize more effective international cooperation. And then, the global existing and anticipated problems can be controlled (Beck, 2000, P.156)."

The tenet of global system governance should benefit the whole human. From this headstream, we can deduce that the future ideal society of human is to bring the global system governance into the scientific and rational orbit, establish the democratic, equal and free social system from everyone to various layers of the whole world, which can furthest maintain and guarantee all individual benefits, give attention to all national actual benefits and long-term benefits, promote the balance development and sustainable development of all nations and countries, ensure the mutual harmony and mutual adaptation between the development of human society and the natural ecological environment, effectively prevent and avoid the global disaster which may influence human, and effectively reply various threats faced by the whole mankind, and maintain and ensure the security of the whole people.

On the road leading to the future ideal society of human, we need overcome the obstacles existing in human, i.e. the limitation of recognition and the limitation of benefit. For example, individual strong nations or countries attempt replacing the global benefit with the benefits of their nations or countries, attempt replacing the global will with the wills of their nation or countries, and attempt establishing the local hegemony over the unity, and this sort of global system governance is certainly not extensively accepted by all nations and countries. The premise to realize the global system governance is that human achieve the uniform cognition to the object, strategy and behavior of the global system governance. "Human should be educated to possess global opinions and speak from the global view (Mel Gurtov, 2000, P.337)."

4. State of global system

It belongs to the rational cognition category to analyze and describe the state of global system. The course of globalization closely goes with the arousal of human sense. From Revival of Learning to Great Geographical Discovery and Religion Reform, from science revolution to initiation revolution and the industrial revolution, a series of heavy hammer smash half of the chains, which liberates half of the human sense from the theological superstition, and makes human grasp the scientific tool to know the nature, therefore, the human cognition to the pure objective nature has achieved the rational level. However, human still can not hold the scientific toll to know the human society, and the human cognition to the half subjective and half objective human society has not achieved the rational level. The half of the human sense has not been liberated from the ignorant fetters.

Because the sense of human behavior is influenced by the components of cheat and anti-sense and it is diagnosed and analyzed by the subjective wills and requirements of system health and system perfection, many problems objectively exist in the state of global system. On the microcosmic layer, human can not effectively solve the harm induced by individual self-concern behaviors to others, family, team, organization, society and environment. On the middle layer, human can not effectively solve the problem that various force groups monopolize national regime and implement autarchy governance. On the macro layer, human have not established the effective mechanism which can conciliate conflicts of value concept and actual benefits among nations and countries, and harmonize the relationship between human social development and natural ecological environment of the earth. Therefore, the state of global system can be continually improved along with rational direction in above aspects. "Real history is knitted by real tribulations which can not be correspondingly reduced because of the increase of measures to eliminate tribulations (Max Horkheimer, 2006, P.32)."

No matter from which layer in the system or which position on the earth we consider, the human live is still far away from the justice society that human expect. "Up to now, the problem puzzling us is why paupers are poorer and poorer and rich men are richer and richer (Herbert, 2005, P.142)."

Both sign and essential of sense are based on the science. "Science is a great glossary in our times, but nobody can really consider and review it. For the problem which things compose the science, there is not a uniform or lineal definition all along (William, 2006, P.4)."

That should mainly aim at the domains of human science and social science. On the one hand, "because the present anthropology is dissevered by different influences which sometimes conflict each other, so many anthropologist lacks a sort of clear figure feeling or intention feeling. Many anthropologists don't know what values early scholars' research values possess, and don't know what values their own researches have (William, 2006, P.11)."

On the other hand, "when we introduce the theory of sociology, we will find that different scholars will develop different theories, and the differences among them are huge (Jonathan, 2006, P.18)."

"The bone of contention rests with whether the theory of sociology can become into science. Some human think it can and some human think it cannot, and someone keeps neutral (Jonathan, 2006, P.1)."

For the strict meaning, the development levels of human science and social science are still in the primary stage which corresponds to the primary mathematic stage in the mathematic domain, or the geocentric theory stage in the astronomy domain, or the element theory of "gold, wood, water and fire" in the physical domain, and though the description and cognition to the research object possess certain

reason but that is indistinct and injudicious. For example, the basic theory in the domain of social system engineering is still comparable weak, and one important branch decision theory is not propitious to deeply analyze the complex problem, and the present decision theory and its application are only limited in the bilateral decision model for the situation composing, and the multilateral decision model has not been established. For the object optimization, the decision theory is still limited in the unilateral decision model, and the public decision model has not been established. The decision model is going to transform from the simple decision theory to the complex decision theory. The main body of strategy, the object of behavior and the relationship of benefit and loss are basic concepts which should be first cleared. The breakthrough of theoretic researches about multilateral decision and public decision will offer more convictive scientific tool and method to analyze the solution of the problem of social system engineering.

Aiming at the research of the global system, the cooperation of human science and social science should be further strengthened. On the global layer, the social system engineering needs the participation and cooperation of many subjects and domains such as the domain of social psychology. The direct feeling indicates that the same as the mutual jealousy, suspicion and hatred existed among individuals, they also existed among different nations, different countries, different cultures, and these unhealthy psychological reactions and actions not only seriously disturb the good developments of national relationship, international relationship and multilateral culture relationship, but also possess negative functions to produce hatred, deepen difference and induce conflicts. The cause and effect of this negative phenomena lack not only deep theoretical research, but the practical countermeasures of prevention. Therefore, the global layer inaugurates new research direction for the macro social psychology.

5. Evolution of global system

The human civilization is the highly general description for the development of human society, and the evolution of global system can be analyzed based on two dimensions including the civilization character and the civilization type.

According to the character of civilization, there are two sorts of civilization. The first sort of civilization is the civilization between human and nature, i.e. the civilization produced and developed in the relationship between human and nature. The second sort of civilization is the civilization between human and human, i.e. the civilization produced and developed in the relationship between human and human. Every sort of civilization puts up different types in different historical terms.

For the first sort of civilization, the development course of human civilization, i.e. the evolution of global system, can be divided into five eras including the era of region, the era of globalization, the era of solar system, the era of Milky Way galaxy and the era of whole universe from far past to infinite future. The order, character, range and civilization type of every era are seen in Table 1. "In the 21st century, the development of spaceflight technology is developing new civilization space for human. Tsiolkovskiy said that the earth is the cradle of human, and human can not live in the cradle for ever. The ideal of this spaceflight pioneer is gradually changed into exploring actual action today (Wang, 2001, P.429)." Therefore, the first sort of civilization of human society has entered into the transition stage from the era of globalization to the era of solar system.

For the second sort of civilization, except for traditional standard giving priority to the productivity, the definition of civilization must be peaceful and harmonious at least. Human cannibalism war is absolutely the behavior that human deviate from civilization and Human wildness and beastliness in the war is absolutely not the humanity of civilization. If only wars exist, human society is not civilization. The ability to create and maintain the peace is one of necessary important signs in human civilization. In the dimension of the second sort of civilization, the entire lifecycle of human development can be divided into three stages including former wild stage, middle stage with half civilization and half wildness, and upper stage of civilization. Up to now the development of human society has not only civilized glory and resplendence, but also uncivil sin and darkness, so the course of the second sort of civilization is still in the stage of half civilization and half wildness.

This is the general explanation for the evolution of global system by the character of civilization and the size of type. As viewed from the global system, by means of the computer glossary to compare the modern human civilization, and the first sort of civilization can be called as the hardware civilization which is in the relatively mature and developed state, and the second sort of civilization can be called as the software civilization which is still in the relatively puerile and undeveloped state.

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Table 1. The development course of the first sort of civilization

Order of era	Character of era	Range of era	Type of civilization
The first civilization era	Era of region	From origin to the Great Geographical Discovery, the global abroad emigrations begin	Land civilization
The second civilization era	Era of globalization	From the Great Geographical Discovery, the global abroad emigrations begin thus far	Land civilization + ocean civilization
The third civilization era	Era of solar system	From the accomplishment of globalization to the planet immigration in the solar system	Land civilization + ocean civilization + primary outer space civilization
The fourth civilization era	Era of Milky Way galaxy	From the planet immigration in the solar system to the planet emigration in the Milky Way galaxy and out the solar system	Land civilization + ocean civilization + middle-level outer space civilization
The fifth civilization era	Era of entire universe	From the planet immigration in the Milky Way galaxy to the immigration out the Milky Way galaxy	Land civilization + ocean civilization + super outer space civilization