

Because of his academic background in management, philosophy, psychology, and his work experience in the factory and various social practices, he is proficient in applying comprehensive and interdisciplinary research and using practical approach to factory work and social experience to conduct theoretical defense and innovative research. His personality is self-confident, lively and humorous, friendly to others, serious in his work and enterprising. He also loves various sport activities, including kung-fu, swimming and long-distance running. He has a strong physique and is full of energy.



Preface

This book consists of a series of research papers I wrote during my research work at the Social Governance and Innovation Research Center of Tsinghua University from 2019 to 2020. It incorporates comprehensive interdisciplinary studies of management, sociology, philosophy of science and technology and psychology, and it is based on the theories of technological innovation, technology and society, system management, system complexity, scientific rationality and popular epistemology, combining the analyses of current national and social management in China. It encompasses the trends and goals of the Chinese government and current affairs. The comprehensive development of science, technology, economy and society in China has enabled scientific discussions on national governance and social governance. This book uses the optimal decision-making method of management, the management method of complexity system, the logical analysis method of philosophy of science and technology, the practical method of psychology and sociology, the social application method of public knowledge and scientific cognition to dissect the scientific strategy of China's national and social governance.

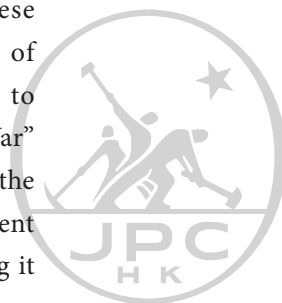
This book is formed by a collection of papers with different research viewpoints in each chapter, and they

are independent of one another. In total, these chapters take national and social governance as the core subject of discussion, and examine them by taking various approaches, including the scientific and technological innovation, technological paradigm, scientific rationality, public awareness and complexity system management. This book focuses on China's current modernized national and social governance strategies. In the last two chapters, I conduct research on ancient Chinese management thinking, employing the perspective of complex system thinking and scientific cognition to explore the quintessence of Sun Tzu's "The Art of War" and "Governing by Inaction". My purpose is to show the extensive and profound management culture of ancient China to readers from all over the world by analyzing it through complexity system management method.

Since the 1980s, China's economic and technological level has been comprehensively developed, and the country's modernization and social governance capabilities have continuously improved. From 2010 to 2020, China's GDP has been ranking second in the world, following the United States. In 2020, facing the outbreak of the COVID-19 epidemic, China used excellent national management methods to arrest the spread of the disease and maintain stable development of the country's economic and social operations. In April 2020, China implemented a type of new infrastructure construction as her national governance strategy and comprehensively

promoted the technological renovation of the digital revolution. China's achievements in national and social governance in recent years have attracted the attentions of the world.

Given these extraordinary backgrounds, my research on China's national and social governance is of great significance. China's scientific method of national governance is a worthy reference to national management of other countries. As a long-time expert of national and social governance, I have presented my research literature on China's national scientific governance strategies to a wide array of international scholars. This is my duty and responsibility as a researcher, and I feel very honored. I am very willing to learn and communicate with scholars from all over the world. It is a glorious and happy task to undertake.



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Chapter 1

Changes in Public Awareness and Technology Paradigm as the Causes of Transformation in Rural China

In human society composed of social groups at its core, public awareness and technology paradigm are two especially important factors. Under the influence of public awareness, the group's thoughts, moral values and affective psychology will suddenly or gradually change. That results in changes in production methods, lifestyles, customs and habits. In the collective consciousness, this change is a powerful force. It will break through the original moral constraints and established notion of civility and strongly challenge the pre-existing social model.

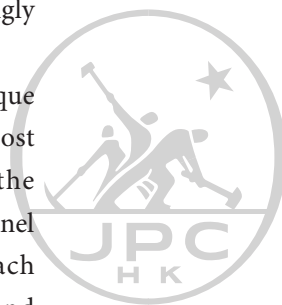
Science and technology are the highest and unique achievement of human civilization, as they are the most powerful force affecting human activities. Once the technology paradigm is formed, it will become the kernel of social change. Countries all over the world attach great importance to the development of science and technology and national scientific thought. The wiser states should make a coordinated development decision on the transformation of public awareness and technology paradigm. Based on these two assumptions, it is of great significance to explore the changes of rural model in China.

At present, China has become one of the countries with the most comprehensive strength in the world. The scale and quantity of China's rural population and area rank first in the world. The transformation of China's rural model not only becomes an important component of the "China's Dream", but also influences rural models of other

countries.

The existence and change of the rural model are the combination of public awareness and technology paradigm, which is the combined results of government regulation and the willingness of the Chinese agricultural workers. Public awareness and technology paradigm are two interrelated and mutually influencing factors; shall the technology paradigm be successful, it can not only rely on the development of natural science and technology, but also be equipped with changes in public awareness, government regulation and coordination in order to transform production practice. As we all knew, agricultural automation in large scale only appeared as early as the 1920s. American farms used large harvesters, planters, agricultural drones, dryers, packaging machines and so on. Today, agricultural automation and mechanization have emerged in developed countries in Europe and America. On the other hand, China's agricultural automation and mechanization fall far behind its first world counterpart as the equipment they commonly use are only small tractors, household threshers, motorcycles and other simple agricultural machineries. In many rural areas of China, they still use cattle for plow farming, and farmers are sowing and even irrigating by manual labour. Due to the gaps in these agricultural technologies, China's agricultural products cannot compete with the first world's agricultural producers.

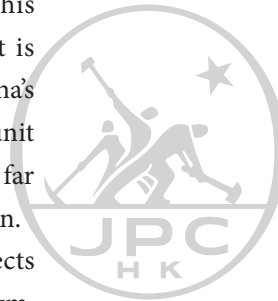
China's recent economic growth has expanded



industrialization and urbanization, upgraded consumption, increased social mobility and initiated a shift from an economy based on agriculture to one based on industry and services. Still, more than half of Chinese people still live in rural areas, where the average income per capita is less than a third of the urban average, a gap that is the largest among the world.^[1]

In the highly developed industry in China, why is the rural production technology still lagging behind? This is not a matter of production technology, because it is subject to the current rural model constraints. In China's rural population, family production is still the main unit of agricultural production, and the rural model is still far from the formation of large-scale agricultural production.

In the final analysis, the rural model seriously affects the formation and development of technology paradigm. Therefore, the study of China's rural public awareness and technology paradigm and the transformation of the rural model is of great significance.



1. The social role of public awareness

1.1 Public awareness and collective mindset

The concept of public awareness stems from public epistemology. What, then, is public epistemology?

Public epistemology can be defined as the common sense (or popular) theory of knowledge for the average person. As with public psychology, mass psychics and mass biology, public epistemology can be seen as a simple, “uneducated” view of the nature of knowledge.^[2] As public psychology is our daily understanding based on common sense of the theory of mind, public epistemology is our daily understanding based on common sense of the theory of knowledge. Public epistemology exists in mature form in adults, but it is actually a product of developmental process of the individual: from the child's original understanding to adolescence psychological form and finally to adult mature epistemology. The developmental scholar focuses on understanding how this popular epistemological evolves from child to adult.

From the concept of public epistemology, public awareness can then be understood as the shared economically, culturally, customarily, conventionally and religiously based beliefs held by a common group of people. Thus, they hold similar views on social, scientific, moral and other issues, and they had the same or similar concept of life and the pursuit of ideals.

Public awareness is usually manifested as a collective psychology, with the public awareness of the organisational group seen as a psychological group. Public awareness is an important symbol of human civilization, which differentiates us from animals, and it is the basis of human practice, the creation of civilization and the source of

scientific and technological innovation.

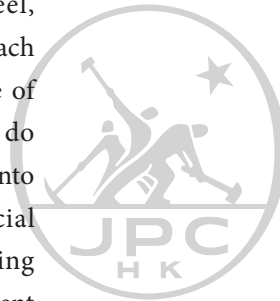
Social groups form public awareness, and thus become a psychological group. The most striking peculiarity presented by a psychological group is the following: whoever will be the individuals that compose it; how like or unlike their mode of life, their occupations, their character, their intelligence may be; the fact that they have been transformed into a group puts them in possession of a sort of collective mind which makes them feel, think, and act in a manner quite different from how each individual would feel, think, and act when in a state of isolation. There are certain ideas and feelings which do not come into being, or do not transform themselves into acts except in the case of individuals forming a social group. The psychological group is a provisional being composed of heterogeneous elements, which for a moment are combined, exactly as the way in which cells constitute a living body form by their composition of being which displays characteristics very different from those possessed by each cell existing singularly.^[3]

In the social group, public awareness is manifested as a kind of collective psychology, so public awareness provides the orientation of group behaviors. This leads to concerted action by the mass group that works to achieve their common goals. Public awareness has an infectious characteristic. In the mass group, the group's will, action and psychological tendencies are contagious. Public awareness thus becomes the driving force of the behavior

and practice of the mass group and also the psychological foundation that constructs a social system.

In the process of the formation and development of public awareness, the collective psychology of the mass group will appear as a collective mindset. The collective mindset searches for the development and trends of things with fixed patterns, processes and plans rather than adopting the most rational model. Components of high executive function, such as the interplay between working memory and inhibition are essential to effective switching between for the collective mindset in different situations.^[4]

This tendency of mental cohesion leads to the tendency of spiritual unity, which affects the thinking and action and intention of the whole public. If the individual enters into a mass group, he will inevitably be influenced by the "collective subconscious", and some changes will be made psychologically into the collective mindset. In other words, the public will gradually form a more fixed way of thinking. Under the influence of the collective mindset, the mass group is easy to form a unified intention, and these psychological motives will produce a consistent group behavior. Psychological stereotypes by the public groups will have a positive or negative impact. When the thinking tendency of the mass group is suitable for scientific rationality, the result of its action is positive. However, psychological orientation is also easy to form dogmatism, and if the public group thinking tendency is non-scientific, it will cause a negative impact on their action.



Public awareness and psychological orientation form personal moral constraints, and the ruling class is the basis of the construction of social mechanisms. Once the public awareness and the collective mindset experience an impactful change, the constraints of individual moral and social mechanisms will be abandoned. In group consciousness, this change is a powerful force, and it will try to challenge the socially fixed model.

1.2 Public awareness of scientific rationality

Public awareness and daily and scientific cognition are closely linked. The so-called daily cognition refers to the community's understanding of the natural world and society, based on the observable world, and summed up some of the daily understanding of things. It is usually an intuitive understanding, with a huge dose of speculative guessing, imagining and thinking. Daily cognition is not a summary of scientific knowledge, and it cannot be measured by scientific rationality alone. Daily cognition is a popular knowledge of the broad masses of people; it is the main source of public awareness.

Daily cognition produces an implicit cognition. Implicit cognition refers to unconscious influences such as knowledge, perception or memory that influence a person's behavior, even though they themselves have no conscious awareness of those influences whatsoever.^[5]

What is the cognitive process involved in scientific activities? How do scientists do reasoning? How do

scientists put forward the development of new theories? How do the scientists deal with the tension between the material world and theory? Do the scientists make any choice between competing theories?

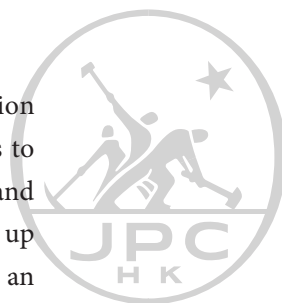
In the study of scientific cognition, the activities of scientists can be divided into the following three general categories:

First, scientists have to understand and evaluate scientific information. Scientists spend a lot of time reading scientific literature and attending academic conferences, which shows how scientists understand and evaluate scientific materials and scientific theories.

Second, scientists have to generate new scientific knowledge. Scientists design and complete experiments to form new theories. These activities show that we need to examine the research strategy and the scientific discovery process.

Third, scientists have to disseminate of scientific knowledge. Scientists spend a lot of time writing and exchanging research results. These activities show that we need to examine the process of scientific writing and the more general process of scientific information dissemination.

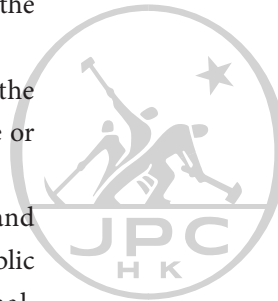
Scientific cognition is the source of scientific knowledge and scientific theory, and it has strict logic. Scientific cognition is the final product of scientific argumentation and scientific measurement. From the characteristics of scientific cognition, public awareness is



not a scientific cognition, as it does not have the criteria of scientific rationality. However, scientific cognition has a far-reaching impact on public awareness. When the public groups accept the scientific knowledge more thoroughly, the public awareness should have the higher scientific rationality. The scientific rationality of public awareness is thus based on the scientific cognition ability of the mass group. The ability of scientific cognition of each popular group is different, so there is also a great difference in the scientific rationality among the various groups.

What then is the rationality? Rationality implies the conformity of one's beliefs with one's reasons to believe or one's actions with one's reasons for action.^[6]

The mass group is a complex and large system, and the group members' cognitive abilities are different. Public awareness cannot be the most scientific and rational, but it can only continue to enhance scientific rationality. The process of human development shows that public awareness has a scientific and rational side, but there is also an irrational and unscientific side. In exploring the scientific rationality of public awareness, it is noteworthy that we must look at the problem with a historical point of view. We cannot use today's scientific rationality standards to assess the public awareness of past different historical periods; the solution is to combine different scientific concepts to analyze different historical stages of public awareness.



1.3 Public awareness of the social role

Society is composed of public groups, and the public awareness among them is an important factor in these mass groups. Therefore, a lot of social construction and human activities are affected by public awareness. From the point of view of national governance that conforms to the mainstream direction of public awareness, the enhancement of public awareness will strengthen the stability of society, promote social development, improve the efficiency of the community and promote the social well-being of all kinds of people. In the case that the state's policies are consistent with the will of the public, the nation is united, and the whole country is a cohesive nation. On the contrary, if the state governance does not meet the public awareness, the state will not be at peace, and the people will not be happy, and the state will fall into crisis.

In the group consciousness, public awareness is a powerful force. Once the public awareness changes, it will break through the original moral constraints and social system and strive to change the pre-existing social model. Every change of public awareness can lead to changes in the concept of groups, ideas and beliefs, which eventually leads to civil and social change.

During the 18th century industrial revolution, the strong change in public awareness is one of the important driving forces. Everyone is trying to use his capital to maximize the value of his product, and the public

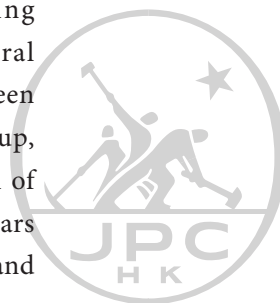
awareness of such change results in a strong psychological tendencies and collective mindset and ultimately becomes a strong driving force to guide collective action.

1.4 Analysis of China's current rural public awareness

China is the world's most populous country. In 2015 statistics, China's rural population is 603.46 million, spreading across 96.82 billion mu of agricultural land.^[7]

Since the 1980's, China's reform and opening up, Chinese farmers are the main body of the rural masses, and the overall quality of the farmers has been greatly improved. Since the reform and opening up, China has implemented a comprehensive expansion of universal education. The implementation of nine years of compulsory education, the expansion of colleges and universities enrollment, the allowance of private colleges and universities and the expansion of vocational college enrollment have allowed many rural youths in the country to receive higher education.

The hopes generated by the developments of science and technology, and the resulting ethos of society may be summarized briefly. First, science and technology become an independent force in society, and their development would determine the nation's future. Secondly, developments in science and technology and their application would lead to the modernization of society, and any resistance to this process is therefore considered reactionary.^[8]



China is serious in educational reform, so that the Chinese farmers understand that the enhancement of scientific rationality of thinking is necessary. A new generation of peasants is knowledgeable, cultivated and creative. In most of the affluent rural areas, farmers understand the scientific leadership of the country. Even in the poor rural areas, under the influence of such transformation in the education system, the farmers have become increasingly scientific and rational. The transformation of rural public awareness are as follows:

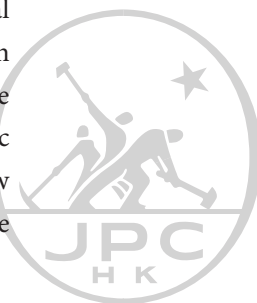
In the political concept of public awareness, China's rural public groups have a strong patriotism and traditions. Since ancient times, every revolution or uprising in China has had the peasant masses acting as the main revolutionary force. At the present stage of peaceful and economic development, their political participation and awareness is not strong, because their economic demands far outweigh their political demands.

In the economic concept of public awareness, the Chinese rural public groups believe in economic benefits, increasing income for the individuals and families, which in their view is an important factor in happiness. Public awareness pursues the material improvement in life, and in turn it can improve the life of individuals and families. The mass group takes the pursuit of increasing economic income as the most important thing in life and survival.

In the cultural concept of public awareness, the rural public groups form a multicultural public awareness.

Not only do they want to preserve China's culture and customs but also accept the Western mainstream culture and customs. For example, the rural areas of Guangzhou have the traditional Chinese Qiaojie, the Dragon Boat Festival and the Mid-Autumn Festival. At the same time there are Western customs such as the Valentine's Day and Christmas. The mass community in rural areas forms a pluralistic view of Chinese rural culture.

In the religious concept of public awareness, the rural public groups do not form an acceptance of a certain religion. Polytheism and fragmented religious views are still the mainstream. With the development of scientific mindset and education of rural public groups, the new generation of peasants is becoming more and more atheistic, and religious concepts are becoming weaker.



2. Transformation of technical paradigm and rural analysis in China

2.1 The transformation of technical paradigm to promote social change

The concept of technology paradigm comes from Thomas Kuhn's scientific paradigm theory. As a historian of science, Thomas Kuhn gives the word its contemporary meaning when he adopts it to refer to the set of concepts

and practices defining a scientific discipline at any particular period of time. In his book "The Structure of Scientific Revolutions" (first published in 1962), Kuhn defines a scientific paradigm as "universally recognized scientific achievements that, for a time, provide model problems and solutions for a community of practitioners."^[9]

Kuhn points to scientific progress that is relied on the transformation of scientific paradigm with new scientific paradigm replacing the old scientific paradigm, and thus science and technology continue to move forward. His paradigm theory is also often quoted by economists and sociologists.

The famous economist Dorsey imitates Kuhn's scientific paradigm theory and proposes the concept of a technology paradigm in 1982. Dorsey believes that the paradigm of technology is "a solution to the choice of technical and economic problems of a model, [where] these economic problems [are] based on the principles of natural science." He said: "A concept of technological paradigm, as explained by Hemanth Tambde, combines a set of interrelated and pervasive innovations. For instance, when important technological innovations which are originally produced in a specific branch of the economy are constellated, pervasive effects on other economic system sectors might occur and be prolonged for some time."^[10]

Dorsey uses his technology paradigm theory to engage in technological innovation research only in the field of economics, and the discussion is not comprehensive. I