

The Ethical Problems in Science Communication of Modern China¹

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Abstract: Chinese science popularization career in the past several decades has its own characters: government as the director, scientists as the main actors, and the public as the passive receivers. The new currents of science communication advocate the position of pluralism and equality instead, although this emerging discipline and practice is encountering various oppositions. Through three widely discussed cases, this paper investigates the ethical problems in contemporary Chinese science communication: can the public participate in vital decision-making in science and technology as taxpayers? Should the public have the “right-to-know” as consumers? Should the local knowledge have the right of existence?

Key Words: science popularization, science communication, applied ethics

In contemporary China, science communication is carried on in the name of “science popularization”. In the past several decades, the science popularization of China formed its own tradition and mode. This paper attempts to analyze the ethical problems present in China’s science popularization career from the viewpoint of modern science communication.

I. Basic characters of China's science popularization career

The term “science communication” only appeared in China in recent years, and its appearance was mainly related to the activities of the Center for Science Communication, Peking University, where the author of this paper works. In the past several decades, those activities dealing with relationships among science, media and the public have been called “science popularization” in China. As activities promulgating science with Chinese characteristics, China’s science popularization has its own distinct features.

First of all, China’s science popularization career is an activity mainly led by the government all the time. This activity is assigned to a quasi-government organization which is named “China

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Association for Science and Technology” to take charge, and the space left for the non-government organization is relatively small. Chinese government fully realizes that promoting people’s science literacy is of great importance for the road of modernization, so it especially emphasizes the work of science popularization. Chinese president issued “Law of the People’s Republic of China on Popularization of Science and Technology” in June of 2002, which confirmed status and significance of the work of science popularization in the form of law. It is unique around the world to do work of science popularization in a manner of legislation.

Secondly, science popularization in China is endowed with very strong Scientism. This kind of idea deems that the masses without scientific training are unintelligent and ignorant. Only through science popularization and science education could they get away from such ignorant situation. For the government, its main goal is helping the public grasp scientific knowledge as much as possible, and thus become qualified workers of the scientific era. Consequently, science popularization is a one-way road for scientific knowledge to be transmitted from top to bottom, namely, from people with scientific knowledge to people without it. Scientism still believes that all science and technology are good, which have only positive values. Because science popularization is considered to be a one-way road to transmit scientific knowledge, scientists are thought to be the principal part of science transmission, while at the same time the public are all receivers. The public has totally played a passive role in the course of science transmission.

Government as the director, scientists as the main actors, and the public as the passive receivers, are three basic characters of Chinese science popularization career in the past several decades.

II. The experiences of science communication in China

From the end of the last century, some young scholars in China attempt to substitute the traditional concept of “science popularization” for the concept of “science communication”, but are encountered fierce oppositions.

There are great differences between the term “science popularization” and “science communication”. One essential distinction between them is that science popularization is a one-way transmission course, and science communication is a two-way interacting process. By “two-way interaction” we mean on the one hand that scientists transmit scientific knowledge to the public, and on the other hand the public also participates in the creation process of scientific knowledge, participates in the constitution of scientific policy and scientific institution, and shapes the science’s social role together with scientists. During the two-way interacting process, the public can understand and accept science better, and science can also better meet the needs of society and culture.

Proceeding from the idea of “two-way interaction”, the advocators of “science communication” have introduced a series of new ideas into China. First, the audience of science communication is expanded in number. The audience of science communication is not only ignorant and illiterate people, or disadvantaged groups with respect to knowledge, such as teenagers, physical laborers, but all members of the public. Then the audience of science communication includes not only

teenagers, but also adults; not only illiterates and people without scientific knowledge, but also those experts in science and technology. Scientists also have much to learn other than their specialty knowledge, for the specialization of science has been strengthened and accelerated since the 20th century, hence communion and understanding between every field become necessary.

Secondly, science communication is not an activity with the single aim to extol science, but to reveal every aspect of science, including its positive influence and negative effects. After the World War II, various negative effects of science begin to be unveiled, such as the danger of nuclear weapons, and the deterioration of the environment. People begin to query whether science always brings blessing to the mankind. Can science, under the self-discipline of the scientific community, always play a positive role to society automatically? Understanding science means understanding both positive and negative values of science at the same time.

Thirdly, the public also have the right to participate in the constitution of scientific and technological policies, and to appraise science's positive influence and negative effects. Modern science is usually "big science" which relies on a nation's subsidization, so taxpayers have the right to query that why their money should be used for making a particle accelerator, or a spaceship, but not used for improving ecological environment and eliminating air pollution. The public have the right to decide what kind of science we need, and towards what direction should our science develop. The spread of Green Thought directly correlated with human future is an important organic part of contemporary science communication.

Fourthly, the government should not be the leading force of science communication. Social forces, especially the media industry, should become the principal part of it instead. Between the scientific community and the public, the media is an essential intermediary.

Advocacy of the term "science communication" and of a series of new ideas related to it has caused fierce oppositions. Generally speaking, the opposing voice comes from several sides as followed. First of all, opposition comes from the quasi-government organization called "China Association for Science and Technology". They hope to maintain the traditional pattern, namely, science popularization work is left to them to direct and organize, and the investment of the government in science popularization is up to them to control and administer. Consequently, from their own interests, they instinctively object to the disapproval of the government's leading status in science popularization.

Secondly, opposition comes from an old ideology, especially from the older generation of science popularization workers and journalists in area of science and technology. In Chinese traditional political culture, information monopolization, information control and one-way flow of information are a kind of normality. Information openness and sharing information equally among the public are never the requirements of Chinese mainstream culture. As the old verse goes, "The people can be let be, but not informed". So, the two-way communication which calls for the public's participation is not allowed by the traditional thought.

This one-way transmission tradition manifests itself in the Chinese translation of “communication” first of all. The real meaning of “communication” in English is “traffic, exchange, intercourse, or interaction”, which originally includes the meaning of interflow mutually. It is very clear that bidirectional flow is communication’s essential feature. However, “传播” in Chinese is often associated with “transfer, transmit, spread, diffuse, disseminate, or broadcast”, which indicates a one-way “flow” of certain material, energy or information. It has no meaning of bidirectional flow. Therefore, when the English word “communication” is translated into the Chinese word “传播”, its connotation of bidirectional flow is lost.

In fact, from my point of view, the translation of “communication” into “传播” and “传播学” is related to the cultural subconscious of the deep psychology of the translators and users. Chinese traditional culture in itself is not a culture to encourage information’s bidirectional flow.

It is just because of the single-direction meaning of “传播” in Chinese, a lot of critics think that science communication is not something new and it only emphasizes the position of media in science popularization. They have not realized that the term of “communication” implicates the idea of pluralism.

It was not until the 1980s that communications was introduced into China. Before that, there was no communications in China; what existed then was only journalism. During the process of its introduction into China, communications has met very great resistance. The reason is that, for Chinese academia, communications is not only a new discipline which is a supplement to journalism, but also the representation of a new kind of ideas for journalism. It is exactly this new idea that promotes the journalism reform in China, and encounters suspicion, critique and resistance at the same time.

What kind of new ideas has the introduction of communications brought with it? First of all, communications has weakened the ideological function of journalism. In the past, news was regarded as the propaganda instrument of political parties, which was the mouthpiece of the party, and the tool of class struggle and proletarian dictatorship. However, with the introduction of communications, people have gradually begun to look on the media as neutral. News is regarded as the process of information transfer and receipt, and news institutions begin to be known as “communication media” or “mass media”. Secondly, communications has imported the concepts of “disseminator” and “audience”, and the idea of equal communication between disseminators and the audience. Consequently, such new ideas have strengthened news’ affinity to the people, and have made the media begin to pay attention to the effects of propagation and the voice of the people. Generally speaking, communication represents the position of “pluralism, equality, openness and interaction”, and it is the inherent requirement of a free and democratic social structure to operate smoothly.

However, the introduction of communications has caused long and sometimes even fierce dispute. Are news institutions information media or propaganda instrument? Does journalism have class character? What is the relationship between journalism and communications? Gratefully, all those disputes quenched finally. Take the last question for example. In the

international academia, as a discipline, journalism' range is far smaller than communications. However, in China, communications couldn't be included in the discipline catalogue. It was not until 1998 that the National Education Commission renamed "journalism" as "news communications" in undergraduate specialty catalogue of the universities. Because of various obstacles that communications have encountered, the course of establishing its own discipline status is relatively slow. Yet at last communications made it anyway, and it can be expected that journalism would be a branch of communications one day in the future, rather than communications being a branch of journalism as before.

The relationship between "science communication" and "science popularization" is very similar to that between "communications" and "journalism". For the colleagues of Center for Science Communication of Peking University, "science communication" which we advocate is not a fashionable name of "science popularization". And we are not merely introducing and applying new media tools in the traditional science popularization. What we really want to do in the first place is introducing the idea of "communication" into the understanding of "science", namely, understanding and treating science with the attitude of "pluralism, equality, openness and interaction".

The idea of science communication requires that the conception of discipline's "equal rights" be set up in the interdisciplinary exchange. It means that science communication objects to "Physics-centricism" and "Biology-centricism" of any kind. It requires equilibrium between "experimental science" and "rationalistic science", equilibrium between "mathematical-physical experimental science tradition" and "natural history science tradition", and equilibrium between guiding principles of "reductionism" and "holism". "Communication" within the scientific community means advancing exchange and dialogue among disciplines traditional and burgeoning, and among disciplines at centre and at frontier. In communication between science and other cultures, the position of pluralism and equality is needed too.

The proposition of all those ideas of pluralism has encountered various oppositions.

III. The ethical problems in contemporary Chinese science communication: several cases

1. Can the public participate in vital decision-making in science and technology as taxpayers? Take building a dam for example.

The principal idea clash which science communication brings is that whether the ordinary folks have the right to express an opinion in vital decision-making in science and technology. The general view prevailing in Chinese society in the past was that ordinary people did not understand science; hence they have neither the qualification nor the right to say something about science and technology. Science media is demanded to make explanations to the public according to the direction that scientists admits, and the public's opinion is not considered important. However, decision-making in science and technology is not totally scientists' business. Modern science and technology cost enormously, so the launch of some projects means that other

projects are denied. Such decision-making actually involves consideration and choice out of political and economic interests. The responsible science communication work should not only explain to the public the technical details of a certain project, but also reveal advantages and disadvantages behind the decision-making in science and technology.

In 2002, around the issue of whether to build a hydropower station on *Nujiang* of Yunnan Province of China, there was a very heated discussion initiated by the media. During the process of discussion, proponents and opponents both invoked scientific knowledge favorable to them. The proponents think economically, namely, they think that building a hydropower station is the only way for *Nujiang* people to shake off poverty. Yet the opponents think environmentally, namely, they think that water storage and immigration which the dam construction requires will lead to the lost of natural diversity and cultural diversity. However, people have more or less ignored the benefit distribution of the dam construction. There were very few articles pointing out that the biggest beneficiary is the electric power company, local government will also increase its fiscal revenues, but local residents are the victims who will suffer the most. But this kind of viewpoint faded away soon. Because the awareness as “citizen” and “taxpayer” of Chinese people is relatively weak, they don’t realize that a lot of large scientific and technological projects are subsidized with their own taxes actually, therefore they don’t know whether they have the right to participate in the discussion of scientific and technological issues. Hence, science and technology media should not be limited to scientific calculation while participating in the discussion of decision-making in science and technology, and should reveal the gain and loss of interests.

2. Should the public have the “right-to-know” as consumers? Take genetically modified foods labeling for example.

Because of strong pragmatism element in the main stream of Chinese culture, Chinese people show a natural favor to modern high technology, but they seldom know about the potential risks contained in it. One other reason is that science and technology media is always interested in imparting the positive effects of high technology, while omitting or telling only a little of its bad consequences and potential risks.

Compared to the European countries, the experience of commercial production of genetically modified foods (henceforth, GM foods) in China is relatively special. Generally speaking, GM foods encounter no resistance of any kind, for information is filtered and then truth is concealed. Therefore, the opposing voice is very faint in China, which is often heard in European countries on the contrary.

Some ingredients of GM foods come from genetically modified organisms (henceforth, GMOs), which involve the recombination of different species. This kind of man-made recombination will cause unforeseen consequences on environmental ecology and human health on the one hand, and artificially cause some ethical problems on the other. For example, vegetarians can not accept plant foods which have transferred genes from animals (for example, tomatoes with genes from deep-sea fishes). At the same time, Moslems can’t tolerate that pigs’ gene is mixed in

mutton, and Hindus can't tolerate bovine gene in their diet, etc. Therefore, from both aspects mentioned above, it is necessary for consumers to have the "right-to-know"; namely, the GM foods must be labeled. As to potential risks on environmental ecology and human health, customers can make judgment by themselves. A label will allow the public to choose to avoid consuming them, thus it can avoid man-made ethical problems described above.

Because there is dispute about long-term security of the GM foods, protecting consumers' right to know and to choose GM foods has already become an international common understanding. In June 2001, the State Council of the People's Republic of China issued "Regulations on the Security of Agricultural GMOs", stipulating that "Approved GM foods in market should be labeled". On January 7, 2002, Ministry of Agriculture of the People's Republic of China issued "Regulations on Labeling of Agricultural GMOs", effective since March 20, 2002. However, this regulation from Ministry of Agriculture has no sanction on pharmacy industry and environmental protection, especially on food processing. On April 8, 2002, Ministry of Health of the People's Republic of China released "Regulations on the Safety of GM Foods" which stipulated that after July 1, 2002, all foods and food additives made from raw materials which come from genetically modified animals, plants, microorganisms or their directly processed products must be labeled. But this rule was abolished in November of 2003, for that if raw materials were proved to be safe, it is then unnecessary to label processed foods.

Currently, 50% of soybeans in the Chinese market are imported transgenic soybeans, which mainly come from U.S.A. and Argentina. These soybeans are mainly used for extracting oil, but most of the public do not know that the edible oil they eat every day is extracted from transgenic soybeans. Though regulations on foods require labeling GM foods, a lot of trade companies don't conform to this regulation actually. Some authors even advocate strongly that there is no need to label GM foods, for label will evoke the public's unnecessary panic for GM foods, hence harmful to the development of transgenic technology in China. Whether the public's right-to-know should be sacrificed for the development of science is a serious ethical problem.

At present, China has already become the fourth largest transgenic crops production country in the world. There are 4 kinds of transgenic crops that China has already authorized commercialization: cotton, tomato, pimiento, petunia. Only two kinds of them, tomato and pimiento, are food. In 2006, pest-proof transgenic cotton planted by 6,800,000 small-scale peasant households cover 3,500,000 hectares in China, which accounts for 66% of the total cotton planting area of the whole nation. But the labeling problem of transgenic crops has not been solved yet. An investigation at the beginning of 2007 revealed that 65% of the interviewees choose non-transgenic products definitely, and 97% of the interviewees think that it is necessary to set up labeling system of GM foods.

3. Should the local knowledge have the right of existence? Take the traditional Chinese medicine (TCM) for example.

Local knowledge has double and somehow contradictory role in China. On the one hand, as a laggard and disadvantaged country in modern times, patriotism and nationalism are the leading

ideology in China. Therefore, Chinese local scientific knowledge has considerable right of existence. Especially in the era of Mao Zedong, folk knowledge including TCM was supported and developed by political authority. “Doing the job with indigenous methods” and barefoot doctors are all excellent examples. Because of Mao’s support and advocacy, TCM has occupied half of China’s medical undertaking.

On the other hand, the modernization project of China also classifies modernity’s narrative as its own ideology. Especially since implementing the reform and open policy in 1978, Scientism associated with grand narrative of modernity has become the powerful ideology of the new era. For people who advocate Scientism, science means modern western science solely. This kind of strict monism has made the legitimacy of local knowledge more and more problematic. In addition, Mao’s thoughts and policies have undergone overall reflection and criticism, thus more and more impugment is heaped on TCM from the modern science’s position. Recently, the opinion of abrogating TCM was put forward again, and attracted quite a number of supporters. Proponents and opponents had fierce debates on the media whereafter. Finally, the Chinese Government came out to declare that they are determined to support the development of TCM as before, thereby ended this media war by and large.

In this dispute, science disseminators on both sides would face ethical criticism, for neither of them comprehensively revealed the strong and weak points of Western medicine and TCM. People who advocate abrogating TCM usually hold a monistic Scientism. They merely eulogize modern scientific medicine based on modern biology, and could not confront its deficiencies and problems already exposed. At the same time, most of the people who support TCM show its strong points and hide its weaknesses from a nationalism position. This kind of ethical criticism only reaches the superficial level of the problem.

The deeper problem lies in issues of power and justice which are involved in the application of Western medicine and TCM. In present-day China, the cost of Western medicine is well-above that of TCM, hence putting down TCM will get the poor stuck in the situation of having no access to medical care. Likewise, queries to the legitimacy of TCM are related to the preference to certain distribution plans of social resources. For example, if TCM, as one kind of local knowledge, has no legitimacy, medical insurance will not cover the cost of TCM, and then doctors practicing it can’t obtain legal guarantee.