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CONFERENCE REPORT

Review of the 22nd National Conference on the Theoretical Study of Science Popularization in China and the International Forum on Science Communication towards 2020

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Introduction

The 22nd National Conference on the Theoretical Study of Science Popularization in China and the International Forum on Science Communication towards 2020 was organised by the China Research Institute for Science Popularization (CRISP) in Beijing from October 17 to October 18, 2015. Nearly 200 international and national delegates from scientific research institutions, colleges and universities, local associations for science and technology from eight countries including America, Canada, Sweden, Australia, New Zealand, India, Japan and Korea participated in the Conference.

Year 2015 marks the completion of the 12th Five Year Plan regarding Chinese national economic and social development and is also imbued with difficulties to be tackled during *The Outline of National Action Scheme of Scientific Literacy for All Chinese Citizens (2006-2010-2020)*. Results of the 9th National Civic Scientific Literacy Survey show that 6.20% of Chinese citizens have possessed scientific literacy in 2015, over-fulfilling the objectives that over 5% of Chinese citizens have possessed scientific literacy as scheduled in the 12th Five Year Plan and further narrowing the gap with developed countries.

Looking forward to 2020, China is profoundly implementing innovation-driven development strategy, energetically advo-

cating 'mass entrepreneurship and innovation' and has raised new requirements for science communication and popularization in China. General Secretary, Xi Jinping highlighted that the significance of science popularization is not second to technological innovation and equal importance shall be attached to scientific popularization and technological innovation. It is proposed in *Opinions on Deepening Reform of Scientific and Technology System and Accelerating Construction of National Innovation System* by the Central Committee of the Communist Party of China and the State Council that "by 2020, scientific literacy of the whole people has to be improved generally; Science and technology support guides economic and social development capacity to be enhanced drastically; China should be listed into an innovative country." It is calculated that output for human resources of science and technology can be supported effectively and China being listed into an innovative country, can be guaranteed only when over 10% of Chinese citizens have possessed scientific literacy by 2020.

With such a background, science communication and popularization in China will step on to new paths, confront new challenges and embrace new opportunities. The present 22nd National Conference themed 'Science Communication towards 2020: Innovation-driven and Social Engagement' probed into future development of science communication and popularization in China in conformity with contemporary needs.

Main Topics and Conclusions

The conference agenda was composed of 2 keynote speeches, 7 plenary lectures and 6 panel sessions. The topics of panel sessions were on the following issues;

1. Science Communication Strategy and Practices in Different Social Contexts (International Forum),
2. Civic Scientific Literacy and Science Communication Capacity Monitoring,
3. Creation of Popular Science Works in the Era of Digital Reading,
4. Big Data & Information-Based Science Communication,

5. Theoretical Development of Science Communication with Chinese Characteristics, and
6. Development and Innovation of Civic Scientific Literacy in 13th Five-Year Plan.

Participating delegates conducted in-depth discussions and communications from the perspective of theory and practice on the basis of these topics to fully reflect cross merging of multiple disciplines and fields, provided consideration to advancement, internationalism and profession, and reached some basic consensus and common understandings. Broadly, the conference can be divided in to the following aspects:

The New Situation Science Communication is Facing

As indicated by Professor Bernard Schiele from Canadian University of Quebec in his presentation '*From Science Communication to Participation in Science*' as keynote report, the science-scape has been completely transformed in just over 40 years. Science exercises profound impact on today's society and has completely remodeled it. The ways of appropriating knowledge, individual and collective, in terms of parceling disciplines, the burgeoning knowledge produced by each of them, the de-multiplication of information sources, can no longer be thought of in terms of models that prevailed in the past.The ambivalence, admiration and suspicion towards science bespeak the two sides of our relationship with science and technology at the beginning of the 21st century. These doubts and queries are part of the contemporary perception of science. The true condition of participation is to act with this ambivalence.

Professor Hak-Soo Kim from Sogang University during the plenary session in his talk '*Why do we fail to communicate science all the time*' mentioned that our science popularization is facing new imperatives of science communication in many aspects, including: public problem versus. scientist puzzle; engagement vs. curiosity; Impression vs. literacy/attitude, etc. Future science popularization needs to focus on these new relationships and suggested that communicators should adopt some new modes for science popularization and evaluating techniques.

Rapid development of information technology and network building in China takes up new media forms based on mobile, interaction. The instant messaging has become increasingly important in people's life, work and study, and mobile and internet have become the primary mode for the public to acquire and disseminate scientific and technological information. The 36th latest '*Statistical Report for Internet Development in China*' published by CNNIC showed that by June 2015, China had 668 million netizens and Internet penetration is 48.8%, approximately among half the number. 88.9% of netizens surf the Internet with mobile phone. Meanwhile, the national reading survey report in 2015 showed that the contact rate of national digital reading has reached 58.1% and the era of digital reading has truly come; personal and independent 'we-media' communication mode for citizens in the form of Blog, Microblog, WeChat and others is flourishing.

With the advent of the information era, environment, means and audiences of science communication and popularization are changing drastically. With regard to specific implementation of science communication and popularization under the new situation, YANG Wenzhi, *Director General, Department of Science Communication of CAST* had profound reflections in the report '*Science Communication Perception on the Basis of Social Computing'*. He pointed out that under the background of informationization, science popularization shall be oriented by demand and take an information based development path. In addition, the concept for big data of science popularization shall be set up to develop new mode of science popularization calculations, build and develop big data of science popularization and innovate service mode of science popularization.

Prof. LI Zhengfeng, Tsinghua University pointed out in his report '*Responsible Science Communication: Questions and Reflections*' that the relationship of research and communication takes on new changes in the 'we-media' era: science popularization transforms from shaped science (definitive science reviewed by colleagues) to science in action (science during scientific research). Furthermore, public-oriented science popularization and science communication also has undergone

changes, converting from unidirectional knowledge transmission to public understanding and participation, interaction and negotiation. Hence, the emphasis of science communication should also change: responsible scientific research and then responsible science popularization are both important in the scientific community.

With this background, the Conference had a plenary session on *Creation of Popular Science Works in the Era of Digital Reading* for the first time where delegates discussed development, creation and popularization of science popularization works in the new era, including video creation and program production on the Internet, special film of science popularization, integration between photography and science, excellent foreign science popularization programmes by children, etc.

In addition, the Conference also had a plenary session on *Big Data & Information-based Science Communication*. The plenary session highlighted the important role of informationization in science popularization in combination with the background of contemporary information reform, and stressed the integration from concept to behavior. For instance, HU Junping, Associate Researcher of CRISP analyzed the situation and status of current information-based science popularization and put forward connotation and measurement of information-based science popularization and other issues. Professor YANG Mingduo of Heilongjiang Association for Science and Technology shared four practice modes for construction of information-based science popularization in Heilongjiang: science popularization institution news media, science popularization institution advertising enterprise, science popularization institution portal web and we-media of Heilongjiang Association for Science and Technology, and shared their experiences.

Exploration and Reflection on the Construction of Chinese Civic Scientific Literacy

The construction of Chinese Civic Scientific Literacy is an important matter of Chinese science communication and popularization for the long term and draws special attention from

the state. It was also discussed with regard to the topic in the conference and some guidance was provided for future implementation.

In the opening ceremony remarks, the Executive Secretary of CAST, Professor XU Yanhao pointed out that all matters of construction of Chinese Civic Scientific Literacy have made remarkable achievements in the '12th Five Year Plan'. However, the '13th Five Year Plan' is the critical period to comprehensively build a well-informed society, deepen the reform, govern the country by law and manage the Party strictly ('four comprehensive'). Faced with new situations and new requirement, civic scientific literacy construction still has a long way to go. Science popularization staff should be confident, explore and innovate, work diligently, boost all citizens' scientific literacy to a new level through carrying out scientific literacy strategies of key populations, and improving the public service capacity.

In the keynote speech of the conference QIN Dahe, *Member of the Standing Committee of the Chinese People's Political Consultative Conference (CPPCC), Vice Chairman of CAST, Academician of Chinese Academy of Sciences (CAS)*, talked about *Climate Change: Science and Science Communication*. He specially highlighted that scientific literacy is the basis to determine the mode of thinking and behavioural pattern of the people and good life. Civic scientific literacy is an important part of comprehensive national strength, one of the core elements of advanced productivity and a direct factor to influence social stability, national economy and the people's livelihood as well as life quality. To help civic scientific literacy take great strides and to improve, attention must be drawn to the following key aspects:

1. Incorporating the construction of civic scientific literacy into related national plan. For example, the index that over 10% of Chinese citizens have possessed basic scientific literacy by 2020 shall be incorporated into the overall plan for national economic and social development in the '13th Five Year Plan'; the implementation and completion of the construction of civic scientific literacy shall be incorporated into the

performance assessment of related department and local government;

2. Incorporating the construction of civic scientific literacy into the national education system and promoting the scientific literacy of key population, including strengthening scientific popularization targeted at juveniles and the rural leftover population and people in remote and border areas, achieving equality and spread benefits of science popularization, etc. and
3. Increasing the input and improving the mechanism to enhance science popularization guarantee capacity, including adding science popularization task in key national science and technology planning project, guiding and encouraging social funds to invest in science popularization undertaking and form diversified science popularization input mechanism, etc.

Local Chairman Forum for Association of Science and Technology introduced a session on *Development and Innovation of Civic Scientific Literacy in 13th Five-Year Plan* where all participating provinces and cities summarized experiences according to practice, by analyzing typical cases. Participants jointly discussed innovative development strategy for the construction of Civic Scientific Literacy during the '13th Five-Year Plan'. Other plenary sessions, such as *Civic Scientific Literacy and Science Communication Capacity Monitoring, Creation of Popular Science Works in the Era of Digital Reading, Big Data & Information-based Science Communication, Theoretical Development of Science Communication with Chinese Characteristics* also actively probed into specific aspects of the civic scientific literacy construction and the implementation of *The Outline of National Action Scheme of Scientific Literacy for All Chinese Citizens (2006-2010-2020).*

Science Communication Strategy and Practices in Different Social Contexts

Science is worldwide and so is science popularization, both facing the new situations. Different contexts shall be fully

considered to carry out fruitful science popularization under similar emerging situations.

The international forum has carried out intense discussion about the topic. In the international forum, 9 experts in the field of science communication from around the world gave reports, while Canadian Professor Bernard Schiele made several comments as Commentator.

Liu Xiufeng, Prof. & Director, Center For Educational Innovation, University at Buffalo, State University of New York, made a presentation titled *From one-way information flow to dynamic engagement: A contextualized approach to science communication*. He emphasized that although public participation model of science popularization is widely accepted, it cannot solve all the problems. He explained the significance of science popularization in contexts to the perspective of America's objection to vaccination. He further said that literacy, education, attitude change and participation are closely related to context.

Professor Masataka Watanabe from Japan Tsukuba University showed the impact of Japanese public popular culture on public understanding for science and technology in Japan. Animation, cartoon, picture-story book and other popular culture improved the common people's interest in science and technology and play a positive role in improve their public scientific quality.

Yin Lin, Associate Researcher of CRISP, taking mobile science and technology museums in China as an example, discussed social context and strategy selection of science popularization. She held the view that influenced by different geographies, economies, populations and other factors, communication strategy and mechanism varying with circumstances exist in different social contexts.

Based on analysis of data collected during Kumbh Mela held in India Allahabad, Indian expert Dr Surjit Singh attempted to measure the cultural distance between science and public. Cultural distance expressed in public understanding of science, all threshold values at each level tend to increase with increased exposure to science. He also mentioned research implication of the threshold values in relation the cultural distance.

Professor Bernard Schiele gave his evaluation on the strategy and selection of science popularization from the perspective of theory and practice, history and reality, and differences in different cultures. He held that the difference of content and strategy of science popularization reflects complicity and diversity of science popularization.

In terms of China's practice specifically, Professor Tang Shukun, University of Science and Technology of China, pointed out that in the context of national development, connotation of science communication should be transformed. Attention should be paid to 'popularization and general benefiting' in science popularization. General benefiting oriented to common people becomes the new emphasis of science popularization. Each group shall be provided with technological knowledge and entrepreneurial and innovative skill with the prospect to create a bright future. Professor Li Zhengfeng also pointed out that responsible communication and popularization should be conducted under a new context and social governance mode should be adopted to make scientists interested in, spend time and impetus to fulfill the duty of science popularization; scientific research support to institutions should provide necessary expenditure support for science popularization and scientists in universities and research institutions should be encouraged to spend more time on science popularization; responsible science popularization should be incorporated in to the evaluation system of scientists' work performance; interactive cooperation rules between scientists and media should be established, etc.

At the same time, some basic consensus was reached regarding the practical condition of China in the plenary session *Theoretical Development of Science Communication with Chinese Characteristics*: (1) It is necessary to actively adapt to transformation of social governance mode, introduce social governance concept, fully respect appeal of science popularization subject, and jointly participate in science equally under the background of new urbanization; (2) For theoretical study of science popularization, attention should be paid to community, primary level, public concern, response to social hotspot and focus and check and support new theory through

practice; (3) It is essential to innovate the mode of science communication and popularization, fully utilize Internet and mobile interconnection technology, structure science popularization service system under information-based conditions.

Follow-up Work

As a continued conference in the field of Chinese science communication and popularization, the National Conference on the Theoretical Study of Science Popularization in China has drawn extensive attention. According to incomplete statistics, over 50 newspapers and websites including People's Daily, Science and Technology Daily, Xinhuanet, Guangming Online reported matters regarding the Conference to different degrees, arousing more extensive attention on the construction of Chinese civic scientific literacy and future development of science popularization by the public.

After the Conference, CRISP will compile dissertations of participation delegates in volumes and publicly publish them. At the same time, CRISP will also launch the database construction of National Conference on the Theoretical Study of Science Popularization in China to advance further in-depth utilization of achievements in the conference and make research achievements to better serve science popularization practice. Meanwhile, CRISP will set up an international communication platform for research and practice on science communication and popularization.