

A Study on the Comparison and Inspiration for Operation Mode of the Maker Space Brand in China and America

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Abstract. Maker space could be simply understood as the place where the guests doing things together. This concept could be traced back to the source-“hacker space” in the European, now it developed into a new form of organization and service platform. It promoted knowledge sharing, cross-border cooperation, creative achievement and even product through providing open space physics and prototype processing equipment to makers and organizing relevant meetings and workshops. According to a maker space list in Wikipedia, it shown that currently there were 2001 invasive space totally in the global. Among them, 1225 maker spaces were recorded as creative space, 355 maker space were planed to be build. These maker spaces were different in styles: some maker spaces mainly were centralized of Geek for coding technology, music recording and technical design; some maker space mainly focused on art design and hand-made; some maker space covered two forms which could create hybrid. According to the service object and function of maker space, it could be divided into the following four types: FabLabs, Hackerspaces, TechShops, Makerspaces operation mode, and it shown the characteristics of specialization, commercialization, etc. According to the difference among operation mode of maker space, investment and business service system etc., the following several modes of maker space existed currently in China: training investment, aggregate type and new type of real estate, the media driven, financing service, industry chain service and integrated business ecological system type.

This paper used the research and comparative analysis method, it made a comparison for brand operation mode of maker space in China and America, compared and analyzed development goals, talent team construction and organization operation mechanism of maker space between China and America. It focused on understanding the latest developments and implementation strategy of innovative talents training and maker space in the United States, put forward development strategy of maker space in China with American maker space brand operation and management experience, and provided reference for Chinese new geek culture mode.

Keywords: Maker space · Brand · Operation mode · Comparative study

1 Introduction

Makers initially were groups with innovative talent and hobby who focused on designing prototype products by use of digital technology, after they became maker groups who were keen for practice, shared technology and exchanged ideas for innovative. Makers

were the representatives of the individual design and manufacturing groups who were most passionate and dynamic, they created a better life with their own creativity. The former chief editor of “Wired”-Anderson forecast in “Makers:The New Industrial Revolution” that people would use the wisdom of the network in the real world in the next ten years. The future not only belonged to network companies which based on the virtual principle, but also belonged to those industries deeply rooted in the real world. “Maker movement” was a booster which let the digital world truly overthrew the real world, it was new wave with landmark significance. The world would realize the creation of the whole people, and set off a new round of industrial revolution.

With the popularity of global maker culture and the rising demand of public innovation and public entrepreneurial, it took the talent aggregation, classification, and management operation mode into national policy making system, and became an important part of maker movement in different countries. As the earliest nation who implemented the maker culture-America, it had the latest research trends and practical strategies in construction, development and operation mechanism of the maker space. On the basis of this, it could provide theoretical reference and inspiration for the development of China’s maker space.

2 The Development and Representative Model of the United States Maker Space Brand

2.1 The Development and Reason of the United States Maker Space Brand

2.1.1 Development History of the United States Maker Space Brand

“Maker” was derived from the comprehensive interpretation of words Maker and Hacker, it referred to software and hardware products which DIY their own creativity. 1984 Hamburg, Germany established the largest and earliest Chaos Computer Club at that time. “The godfather of maker”- Mitch Altman was inspired after participating the Chaos Communication Camp in Germany at 2007, in the San Francisco he founded the most famous maker space brand -Noisebridge after returning to the United States. Subsequently, under the promotion by Mitch Altman, maker space had a rapid development in the global. TechShop, who was called as “the first national open public workshop in the United States”, was a profit-making organization founded in California in 2006. maker space- Attisan’s Asylum in Auckland was found by the maker-Gui Cavalcanti in 2010, as a non-profit service organizations, members could use different public tools for 24 h only need to pay the membership fee.

2.1.2 The Reason of the United States Maker Space Brand Development

The United States was a paradise for thinker, inventor, and entrepreneur, it seemed that American were full of innovation spirit. There were many high tech industries in Silicon Valley, it originated from the early garage makers in the United States. The success of a large number of well-known enterprises, such as the United States CISCO, Intel, Amazon etc. all promoted the success of the United States “garage culture”. At the same time, the United States was the first country to pay attention to entrepreneurship education, it provided different channels of entrepreneurship education, entrepreneurship

competition and entrepreneurship education institutions. In recent years, more and more Americans created any products through the 3D printer, laser cutting machine, design software which was easy to use and desktop manufacturing equipment. They expected to enjoy the pleasure of creating production by own hands, shared the results through the network, and created the future of open source together.

2.2 Three Representative Models of the United States Maker Space Brand

2.2.1 Hobby Gathering Model – Taking NoiseBridge as an Example

NoiseBridge in the United States was located on the west coast of San Francisco City, it was a non-profit educational institutions for the public interest. 5200 square feet of space was located in the city center, the monthly operating expenses was more than 5000 U.S. dollars. As an open maker space, there was no need to pay fees and free to participate in training courses, and even directly went into the maker space to start work. Funding mainly come from the donation by the members, the members had a periodic donations payment of \$10, \$30 and \$60 in a monthly, it could also be a one-time donation. Every week NoiseBridge would open training courses or seminars and other activities attract a large number of like-minded makers to participate, while promoted the culture of maker.

2.2.2 Profit Oriented Model – Taking TechShop as an Example

TechShop was the largest maker space linkage mechanism in the United States, it contained 8 branches, and planed to open a number of branches in the future. Funding sources mainly relied on membership fees and course training fees, membership fees could be paid \$150 for a month or \$1650 for a year. TechShop provided more than \$1 million professional equipment and software, and it had comprehensive guidance of professionals to ensure the safety of members.

2.2.3 New Type of Real Estate Model – Taking WeWork as an Example

Adam Neumann and Miguel McKelvey founded a service platform to provide office space rental for small and micro enterprises, startups and free profession person in 2010 in the United States, with the operation mode of second landlord, it obtained more than 50 billion market value in a short span of four years. Wework was not real estate developers and never did other large investment, instead it leased vacant office in American economic depression as the second landlord identity, and made simple segmentation and re-decoration, then rented to the number of start-up companies, also provided leisure, entertainment and social public space for startups. Wework charged for membership fees and rents to maintain normal operation, and invited venture capital companies and executives to come to visit and exchange from time to time, provided different parties for members, it expected to seek communication platform and obtain more funds cooperation projects.

3 The Development and Representative Model of the China Maker Space Brand

3.1 The Development and Reason of the China Maker Space Brand

3.1.1 Development History of the China Maker Space Brand

Li Dawei who returned from the United States established a “New workshop” maker space in a storey house at the junction of Yongjia Road and South Shanxi road in Shanghai with software engineer Wu Sili couples on March 25, 2011. This workshop was the first maker space in Shanghai even in China. After the introduction of maker to our country, the provinces and cities created a variety of maker platforms for promoting the integration of creativity and manufacturing. To May 2015, Beijing had more than 50 maker space, Shanghai had more than 60 maker space, Tianjin and Wuhan had 30 to 40 maker space, the development of maker space was rapid at Suzhou, Hangzhou, Nanjing, Chengdu, Chongqing and other cities.

3.1.2 The Reason of the China Maker Space Brand Development

With the change of global industrial structure, China begun to focus on cultivating its own brand of excellent enterprises and personnel, and tapped the public’s ability to innovate. Many makers carried dreams, they hoped to their own creativity could be industrialization. The development of electronic commerce and internet made people easy access to information and resource sharing, they were difficult to form a scale and dispersed motivated by interests, this kind of folk spontaneous creativity practice was just accorded with the Chinese government’s macro development. Chinese government provided policy guidance and built platforms for exchange and innovation to mobilize the power of the public, and promoted the transformation and upgrading of industrial structure.

3.2 Three Representative Models of the China Maker Space Brand

3.2.1 Investment Driven Model – Taking Beijing Garage Coffee as an Example

April 7, 2011 in Zhongguancun, the world’s first business theme cafe house was established on the street in Beijing. This maker space provided the most open platform for exchanges and cooperation with the cheapest office environment for the early entrepreneurial team, entrepreneurs could enjoy a free day of open office environment here with the cost only a cup of coffee [6]. Garage coffee did not provide angel investment or shareholding to maker team, it only provided a platform for communication and exchange for entrepreneurs and investors. At present, the main profit model of the garage coffee included advertising and self media, activity venue rental, entrepreneurship training and the normal operating income, etc.

3.2.2 The Polymerization Activity Model – Taking Shenzhen Firewood Space as an Example

January 2015, the premier of the State Council- Li Keqiang who did a inspection in the Shenzhen and came to Shenzhen firewood maker space [7], which ignited China maker space boom instantly. Firewood maker space belonged to Sseed Studio Technology Co., Ltd., CEO- Pan hao transformed old company into a maker space initially, then he felt the atmosphere was too depressed and moved to overseas Chinese city's creative industry park. The ordinary membership fee in firewood maker space was 200 yuan per month, members could enjoy the laser cutting machine, 3D printers and other ordinary work space. VIP membership fee was 1500 yuan per month, members could enjoy a small CNC, engraving machine, Taiwan drilling machine and other advanced equipment VIP work space. Firewood maker space focused on exchange and cooperation for members, held creative projects exhibition weekly, and published business activities party.

3.2.3 Training Guidance Model – Taking Tsinghua i-Center as an Example

Some colleges in our country setted up maker space with their advantages in hardware, such as maker space in Tsinghua University-i.Center was transformed from based industrial training center which was responsible for organization and coordination of the students' metalworking practice and teaching practice. 16500 square meters physical space were equipped with hundreds of digital control lathes, 3D printers, laser scanners and other infrastructure facilities for makers. In January 2013, professor Gu Xueyong in department of industrial engineering opened "cross disciplinary system integrated design challenge" course in i.Center maker space, students could experience skills and practical method required in the project development process deeply and reality, it let students understand the challenges which makers should face. In may 2014, i.Center launched "Building a dream - the United States and China youth maker competition" activity, the purpose was to enhance the cultural exchanges between China and the U.S. and deepen the friendship.

4 Comparison and Enlightenment for the Brand Model of Maker Space Between China and America

4.1 Comparison for the Brand Model of Maker Space Between China and America

4.1.1 Comparison for Brand Model Target of Maker Space

The mission of many maker spaces in the United States was to provide open space and advanced prototype processing equipment for the public, and to promote global manufacturing innovation. The goal was to shorten the distance for the tourists to communicate and cooperation, and strive to save resources, protect the environment at the same time of localization. The rising of China maker space came from government "bonus system", as early as September 2014, Premier Li Keqiang proposed to set off a new wave of "public entrepreneurship", "entrepreneurial roots" at the summer Davos forum

opening ceremony, formed new situation of “everyone innovation” and “peoples business”. Brand goal of China maker space was to comply with the requirements and the characteristics of the network of innovation and entrepreneurship, construct the low cost and convenience new business service platform through professional services and market mechanism, provide work space, resources sharing space and project incubator space for entrepreneurs, be able to provide technical funds, team building, business counseling and other support for grassroots entrepreneurs so as to revitalize China’s manufacturing industry.

4.1.2 Comparison for the Brand Policy of Maker Space

In June 18, 2014, U.S. President Barack Obama held the first carnival in the White House, it aimed to foster and encourage the spirit of innovation, and achieve “the root rejuvenation of the U.S. Manufacturing”. President Obama also announced new measures to let more Americans who was young or old use technology and tools to live their own lives easily. More than 13 federal government agencies and companies including Etsy, Kickstarter, Indiegogo and local automotive manufacturers provided business guidance, training and start-up funding for U.S. manufacturers and major retailers. Ministry of education and other five institutions, more than 150 colleges and universities, more than 130 libraries and large companies including Intel, Autodesk, Disney, Lego, 3D systems committed to create more maker space, and launch more students and educators to join them. Ministry of defense, the Department of energy, the National Aeronautics and Space Administration, the National Science Foundation and other 11 federal agencies provided 2 billion 500 million \$ a year to finance small business innovation research (SBIR) and the small-medium enterprises technology transfer (STTR) project. The United States Department of agriculture would launch two new competition to encourage the agricultural technology and production of the surrounding colleges and universities. Competition helped to promote the development of agricultural technology and entrepreneurship, and promote food, agriculture, natural resources, rural development and other related issues.

In terms of maker space in our country, in March 2015, the general office of the State Council issued “The guidance for development of maker space to promote public innovation and entrepreneurship”. The idea mainly focused on accelerating construct public record space, promoting maker space, entrepreneurship coffee and innovative workshops; Reducing the threshold for innovation and entrepreneurship, simplifying the business registration process, local governments gave appropriate financial subsidies; encouraging scientific-technological personnel and students to entrepreneurship, encouraging high school to open the innovation and entrepreneurship education, increasing the training of college students; improving the venture investment and financing mechanism, carrying out Internet public equity financing pilot measures etc. China’s current rapid development of the maker space did not form a scale yet. The integration of enterprise and university entrepreneurial team was not deep.

4.1.3 Comparison of the Construction for the Brand Team in Maker Space

The MIT Media Lab in Massachusetts Science Institute was founded in 1985, it belonged to of architecture and design institute of Massachusetts Institute, it had profound attainments in the field of transformation for achievements of science, technology, multimedia, including touch user interface and wearable devices. The foundation of media lab team building was strong, there were nearly 40 senior researchers, 48 cooperative enterprise researchers, 75 visiting scientists and post doctoral, 80 technical and administrative personnel. There were more than 100 graduate students, these people had different disciplines background and work experience, while more than 200 students worked in the laboratory through the undergraduate research opportunity program (UROP) each year.

Beginning in 2014, “basic industrial training center” in China’s Tsinghua University was upgraded to “i.Center”- specifically belonged to the Tsinghua people’s “maker space”. i.Center was the world’s largest campus maker space which covered 16500 square meters, all the students in Tsinghua University should be trained with creative thinking in this factory. They need to do a hammer, because it was a collection which all the tools should be used in the workshop, so that students could grasp the creative ability of the product quickly. There were a total of 107 faculties and staffs in Tsinghua University basic training center, staff who directly engaged in teaching were 81 people, a professor and seven associate professors existed in 8 people. There were a large number of high-quality experimental guidance teachers in i.Center, they communicated with the world’s leading maker actively, and understood the forefront of the creative practice. Including firewood space founder Pan Hao, he was hired as a maker teacher, he exchanged the growth process of maker space with students. NoiseBridge founder Altman Mitch and more than ten countries-outside maker talents were serve as guest mentors in i.Center.

4.1.4 Comparison for the Business Model of Maker Space Brand Government Agency Business

U.S. Defense Advanced Research Projects Agency (DARPA) reached a cooperation agreement with the Department of Veterans Affairs. Techshop would establish new maker space in Pittsburgh, Pennsylvania, and Washington, DARPA’s new adaptive vehicle manufacturing projects worked with the techshop together, made cooperation with experimental platform for the development of advanced manufacturing technology. At the same time, the Department of Veterans Affairs and Ge Corp provided free membership for one year and \$350 worth of professional guidance and training for more than 1200 veterans in the country. Our country maker space was based on priority policy, the Shanghai science and Technology Committee, the Communist Youth League in Shanghai Committee and other units started the “business Pujiang” action plan. Shanghai maker space alliance established and initiated by nearly 40 venture service organizations jointly would become a new incubator resource sharing, exchange and cooperation platform in Shanghai. Beijing issued “Entrepreneurship China” Zhong-GuanCun venture leading engineering (2015-2020), the main task was to support Zhongguancun business organization and the innovation resources docking, played

advantages in the field of intelligent hardware industrial, and provided entrepreneurial projects and professional personnel.

Manufacturing Enterprise Business. Fujitsu Corporation with and the United States Laboratory of Fujitsu and TechShop held “TechShop inside” activities together. A move maker space was opened to children of all ages, which was equipped with many 24 foot trailers of the prototype processing equipment, it aimed to enhance the students’ interest and creativity in the field of science, technology, engineering, art and Mathematics (STEAM), advocated “learning by doing”, improved students practice activities and access technology. At the beginning of most maker space establishment, it was non profit and aimed to manufacture DIY and share knowledge, created maker space development environment, provided project incubation space. Maker activity remained in the initial stage of industrialization production and creative realization, therefore it was not really fusion with the China manufacturing enterprise deeply.

Comparison and Analysis for the Business Model of Maker Space Between China and America. Cooperation between our country maker space and government agencies still stayed in policy support stage, it mainly provided incubation environment for makers, while maker space in the United States helped and solved the military project development and Veterans Service with the financial assistance from government, mutual benefit and win-win formed industrial virtuous circle. United States maker space had cooperation with Ford Motor which opened a brand maker space, established the partnerships encouraged employees to develop new car technology by changing the innovative environment. TechShop and Standford D.School had cooperation to open innovation center in order to train students hands-on ability and scientific interest. In China,maker space business development existed “entertainment” phenomenon. Therefore, it was an urgent problem need to be solved that how to strengthen the cooperation business model of maker space, manufacturing enterprises and institutions of higher learning.

4.2 Inspiration from the Comparison for the Brand Model of Maker Space Between China and America

4.2.1 Understanding Maker Space Brand Concept

“The godfather of maker”-MitchAltman said that although he visited different maker spaces around the world, Noisebridge was still his favorite. A lot of maker motions were gathered together by “creative changed to be reality” spontaneously in the United States, it took the maker space as a storm of the entertainment paradise. Compared with the original intention of maker space in China and America, it could be seen that there were still a lot of shortcomings in our country. The maker space in China after “localization” received supports from technology companies and real estate developers, established the entrepreneurial coffee shop and project incubator, it aimed to launch a better idea and get greater commercial value. Too strong idea of starting a business bounded the infinite of creativity, so many fantastic but interesting products of foreign countries were

difficult to see in the Chinese market. The future Chinese maker space development needs market leading incubator, also need priority and pure maker space.

4.2.2 Developing a Good Maker Space Brand Team

Counting world-renowned maker space collar army brand, TechShop found by Mark Hatch and Artisan's Asylum found by Gui Cavalcanti could be thought in people's mind. We should enhance the training quality and service level, build a space brand management practice could not be separated from the construction and cultivation of high-quality personnel. With the opening of our country's business services market and policy system, the competition of innovation and entrepreneurship was becoming more and more intense. In this process of competition, cultivating high-quality talent team to develop brand development strategy and seeking greater space for development were problems that our country's makers need to think about.

4.2.3 Improving Brand Security System of Maker Space

NoiseBridge and techshop respectively through member donations, appropriate tuition training courses, as well as strict membership system maintained its own operations, it solved the contradiction between expensive rent and the using of high quality hardware for members, while our country's maker space dependent on government subsidies heavily. Our country should draw lessons from the successful case of the United States, studying and formulating sustainable development of the ecological circle, providing a basis for the development of other space with flexible mode of financing and sound management system.

5 Conclusion

The spirit of maker was collaboration, open source, sharing and cooperation with the entrepreneur to take the ideal into reality. Now the pace of global integration was accelerating, the United States maker activity was rising, the maker culture in China began to take root. China's political environment, investment channels, the training concept of the different formed a unique development model of localization maker space. Finding the similarities and differences of maker space operation mode between China and America through the network investigation and literature comparison method, get the enlightenment conclusion that our country should clear maker space brand concept, improve maker space brand system construction, cultivate outstanding maker space talent team and improve maker space brand guarantee system. Cultivating a good environment for growth was conducive to the development of our country's maker movement, promoting the innovation of China's industrial and technological level, and achieving the great rejuvenation of the Chinese nation.

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