

The New Role of Design in Innovation: A Perspective from China and Its Policy

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Introduction

According to Schumpeter, society is destroyed every fifty years, with disruptive innovation resulting in industrial revolution.¹ This implies a historic match between industrial revolution and economic paradigm. In the Western time-line, the industrial economy was initiated at the end of the 17th Century. In the 20th Century, companies based on technologies and manufacturing methods arising from the 2nd and the 3rd industrial revolutions emerged in various product categories in what has been referred to as the experience economy.² The current stage of development is described as the 4th industrial revolution, and characterized by both significantly improved abilities and the capacity for changing the world.³ It is supported by new and subsequently popularized technologies, such as the internet, computing, cloud data and 3D printing, all of which have rapidly improved, and pushed the economic transformation from the industry and the experience economy to a knowledge economy.⁴ This has had consequences for heterogeneous product categories, ways of manufacturing, ‘life-styling’, people’s mind-sets and business mind-sets, in addition to transformed ways of creating value,⁵

¹ Schumpeter viewed innovation as the main stimulus to growth. Historically, he found that capitalism was moving in “discrete rushes” or long waves: every 50 years or so, technological revolutions would sweep old industries away and replace them with new ones in a process of “creative destruction.” Each wave of technology would attract investment and provide new jobs to replace those lost.

² Duguay, Claude R., Sylvain Landry, and Federico Pasin. "From Mass Production to Flexible/Agile Production." *International Journal of Operations & Production Management* 17, no. 12 (1997): 1183-4.; Heskett, John. "Past, Present, and Future in Design for Industry." *Design Issues* 17, no. 1 (2001): 20.

³ Schwab, K. 2016. “The Fourth Industrial Revolution: What It Means, How to Respond.” *World Economic Forum*, assessed on 13 December, 2016. <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

⁴ Brand, Reon, and Simona Rocchi. "Rethinking Value in a Changing Landscape: A Model for Strategic Reflection and Business Transformation." Eindhoven, the Netherlands: Philips Design, 2011:11.

⁵ Normann, R., and R. Ramirez. 1993. “From Value Chain to Value Constellation.” *Harvard Business Review*, 71(4): 75.

design methods,⁶ and the role of the designer.⁷ The role of design has been transformed from that of assigning styling of a finished product to a power of business innovation, industrial strategy and even national competitiveness. This trend has been demonstrated by evidence from advanced countries and regions, such as the value of design for Europe 2020 strategy recommended by the European Design Leadership Board (EDLB), *German Industry 4.0*,⁸ *British Industry 2050*,⁹ and the Digital Manufacturing and Design Innovation Institute (DMDII) in the U.S.A.¹⁰ All these demonstrate that design is essential to creativity, and can be the key to progress through utilizing and integrating internet, big-data, flexible manufacturing and cloud computing.

Against this economic background, "Made in China 2025" was unveiled on 19th May 2015 as the first ten-year plan for transforming China from a manufacturing giant into a world manufacturing power.¹¹ It aims to remedy China's manufacturing problem with a comprehensive upgrading of the sector with emphasis on seeking innovation-driven development, applying intelligent technologies, strengthening foundations and pursuing green development. *Made in China 2025* has been constantly compared with Germany's "Industry 4.0", a national strategy that aims at endorsing research and innovation and is of revolutionary

⁶ Gardien, Paul, Tom Djajadiningrat, Caroline Hummels, and Aarnout Brombacher. "Changing Your Hammer: The Implications of Paradigmatic Innovation for Design Practice." *International Journal of Design* 8, no. 2 (2014): 121.

⁷ Perks, Helen, Rachel Cooper, and Cassie Jones. "Characterizing the Role of Design in New Product Development: An Empirically Derived Taxonomy." *Journal of Product Innovation Management* 22, no. 2 (2005): 120.

⁸ INDUSTRIE 4.0 is one of 10 "Future Projects" identified by the German Government as part of the High-Tech Strategy Action Plan 2020 - to establish Germany as a leading provider and market.

⁹ Government Office for Science and Department for Business, Innovation & Skills published Foresight Project: Looking at the Long-term Picture for the UK Manufacturing Sector between Now and 2050 on October 30, 2013. Accessed on October 2 2015. <https://www.gov.uk/government/publications/future-of-manufacturing>.

¹⁰ Manufacturing.gov. "Digital Manufacturing and Design Innovation (DMDI) Institute." Accessed October 2, 2015. http://www.manufacturing.gov/docs/DMDI_overview.pdf

¹¹ For the detail information of Made in China 2025, please refer to the website of it by MIIT: <http://www.miit.gov.cn/n11293472/n11293877/n16553775/>

significance in industry.¹² All the policies demonstrated rethinking of the innovation in industries, especially in the manufacturing industry in those countries as a reaction to the challenges arising from the knowledge economy.¹³

Made in China 2025 documented the findings from a research project funded by the Chinese Academy of Engineering which commenced in August, 2013. In it, innovation design was defined as the main method for improving the innovation capability of the manufacturing industry.¹⁴ The project was entitled “Strategy of Innovation Design”, and represented the first top-level research initiative for design policy in China, since it was founded in 1949.¹⁵

The purpose of this paper is to introduce the discussions in the project, including the role of design in the light of a transformed paradigm of economy, a method of promoting design and collaboration with industries. As a fast-growth developing country, the experience attained in the process of the research may be taken as a reference by the less-developed countries where the design awareness can be improved and an understanding gained of the business value contributed by strategic design.

A Review of Design and Innovation Strategy in China

Comparing to Western countries, China has pursued a unique path of innovation because of its political, economic and cultural history. Until the 1950s, China had no modern industries,

¹² Koch, V., Kuge, S., Geissbauer, R. and S. Schrauf. 2015. *Industry-4-0.: Opportunities and Challenges of the Industrial Internet*. Strategy & Pwc:20-5.

¹³ Lee, K., Jee, M., and J. H. Eun. 2011. “Assessing China's Economic Catch-up at the Firm Level and Beyond: Washington Consensus, East Asian Consensus and the Beijing Model.” *Industry and Innovation*, 18(5), 493.

¹⁴ The statement is in improving manufacturing innovation, which is listed as the first one of nine tasks identified as priorities in *Made in China 2025*.

¹⁵ The Principal Investigator (PI) is Dr. Lu Yongxiang, who was the Vice Chairman of the National People's Congress Standing Committee (2003-2013) and President of Chinese Academy of Science (2004-2016),. The Co-PI is Dr. Yunhe Pan, who was The Vice President of Chinese Academy of Engineering (2006-2014).

although these had been developing for almost two centuries in the Western nations. Western nations recuperated, technologically, between the two world wars but this was not the case in China. It has been stated that China did not have a really modern design movement until 1979, which was the year of the launch of the Open Policy.¹⁶ This implies that China faces the challenges from the three economic paradigms concurrently.¹⁷ This is typical of a rapidly developing economy.

Since the Open Policy, China has maintained its pursuit of developing technology via absorptive and re-innovation means.¹⁸ In the first decade of the Open Policy, China introduced its strategy of innovation to learn technology from overseas. The main objective was to build capability in mass-production. Entering the second stage of open policy, absorptive innovation was recommended to develop the ability of producing diverse products to satisfy the diverse demands from consumers. Effectively, it limited China's role to that of a low-end manufacturing supplier. For example, in the value chain of the iPhone, Apple's share was 58.5% of the value, while China only accrued 1.8% as a result of its labour in the manufacturing stage.¹⁹ It is at the current stage that the value of design as a differentiator for brands is recognized (Table 1).

Table 1. Focus of business and design in the three economic paradigms in China

	Industry economy (1980s)	Experience economy (1990s)	Knowledge economy (2010s)
People's mindset	Proud of ownership	Experience of target	Enable creativity
Focus	Build manufacturing capability	Build technological innovation capability	Develop design/innovation capability

¹⁶ Huan, Guocang. "China's open door policy, 1978-1984." *Journal of International Affairs* (1986): 1.

¹⁷ John Heskett stated in his paper "Past, Present, and Future in Design for Industry." *Design Issues* 17(1), that all these phases are a part of the history and there is no sequence of linear progression.

¹⁸ The policy was suggested with a background of how to acquire advanced knowledge from developed countries through foreign direct-investment spill over (FDI). The objectives included building own innovative team, learning-by-doing, and absorbing knowledge via various channels with support from government.

¹⁹ Kraemer, K., Linden, G. and J. Dedrick. *Capturing Value in Global Networks: Apple's iPad and iPhone*. (University of California, Irvine, University of California, Berkeley, y Syracuse University, 2011): 5-6

Innovation strategy	Imitation	Introduction-digestion-absorption-innovation	Indigenous innovation
Ways of innovation	Technology-push	Market-pull	Design-driven
Business focus	Goods	Brands	Open platform
Business type	OEM ²⁰	ODM/OBM ²¹	OBM/OSM ²²
Role of design	No design	From design as styling to design as a process	From design as a process to design as strategy

Note: Illustrated by author

In the Knowledge Economy, China is now on the same time line as other countries. As a consequence of the challenges and associated need for change, indigenous innovation and an innovation-oriented economy have been encouraged by the Chinese government to replace the absorptive innovation strategy. Following on from this, Chinese enterprises have had to remedy what was missed in the stage of imitation and absorptive innovation. The new innovation strategy was documented in two publications. One was the *Decision on Implementing the Outline of the Scientific and Technological Plan and Enhancing the Independent Innovation* published by the State Council on 26 Jan 2006. Another was the *National Guideline for Medium and Long-term Plan for Science and Technology Development (2006-2020)* published by the State Council on 26 Dec 2005.

From imitation to absorptive innovation, the inertia of industrial mind-set and lack of innovation capability impeded the development of indigenous innovation. In the field of innovation performance, China is still backward, especially when compared with the U.S.A. and her neighbours in Asia, such as Japan. To improve innovation capability, China has invested a lot in R&D in the past few years through various policies and plans. Comparing the performance reported by the Bloomberg Innovation Index in 2013 and 2016, China has

²⁰ OEM: original equipment manufacturing.

²¹ ODM: original design manufacturing; OBM: original brand management

²² OSM: original strategy management.

shown a significant achievement in R&D intensity, productivity and hi-tech density, which are “hard factors” and can be easily improved with financial investment. However, this did not lead to an increased record of “soft factors”, such as patent activity, researcher concentration and manufacturing value-added. It implies a gap between investment in “hard factors” and outcomes of “soft factors”.

Design for Indigenous Innovation

In the light of the emerging trends, design is integrated with digital technologies and advanced manufacturing to create a national innovation system, new business model and platform.²³ Design not only contributes to its professional methods and knowledge, but also develops new processes through design thinking.

The role of design is changed to lead innovation activities at the current stage.²⁴ It has evolved from the specialist, professional brand dominated, sub-process of NPD to that of NPD process leader. A similar way of dividing the levels of design’s role may be found from the Danish Design Center, which divided the role into four design ladders, these being no design, design as styling, design as process and design as strategy. Burns, Cottam, Vanstone,

²³ See the viewpoints from design fields and policy development. Related publications are Han Van der Meer, “Open Innovation – the Dutch Treat: Challenges in Thinking in Business Models.” *Creativity and Innovation Management*, 16.2(2007):196-7.; Hartmut Esslinger, *A Fine Line: How Design Strategies Are Shaping the Future of Business*. (San Francisco: Jossey-Bass, 2009), 13.; Tim Brown, *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*. (New York: Harper Business, 2009), 4.; Roberto Verganti, *Design-driven Innovation*. (Harvard Business Press, 2009), 4-5.; Jonathan Woodham, 2010. “Formulating National Design Policies in the United States: Recycling the ‘Emperor's New Clothes’.” *Design Issues* 26.2(2010):28.; Hobday, Mike, Anne Boddington, and Andrew Grantham. "Policies for design and policies for innovation: Contrasting perspectives and remaining challenges." *Technovation* 32.5 (2012): 273.

²⁴ Roberto Verganti, "Design as Brokering of Languages: Innovation Strategies in Italian Firms." *Design Management Journal* 14. 3 (2003): 35.; Brigitte Borja de Mozota, "A Theoretical Model for Design in Management Science." *Design Management Journal* 3.1 (2008): 31-2.; Claudia Acklin. "Design-Driven Innovation Process Model." *Design Management Journal* 5.1 (2010): 57.; Younjoon Lee and Martyn Evans, "What Drives Organizations to Employ Design-Driven Approaches? A Study of Fast-Moving Consumer Goods Brand Development." *Design Management Journal* 7. 1 (2012): 75.

and Winhall described the transformative role of design as “transformation design.”²⁵ The new relations between design, innovation and user were described by Verganti as “design-driven innovation,” which contributes to radical innovation through meaning language created by design and followed by technologies.²⁶

Table 2. Brief historic stages of design in China

	Industry economy (1980s)	Experience economy (1990s-2000s)	Knowledge economy (2010s)
Design in manufacturing	<ul style="list-style-type: none"> - Manufacturers began to establish design sections. - Production with constraints of imported production line. 	<ul style="list-style-type: none"> - The modern internal design departments formally emerged. 	<ul style="list-style-type: none"> - Recognized as styling for differentiation.
Design industry	<ul style="list-style-type: none"> - Designers viewed as “art workers.” - Design for the decoration of “light” products. - In 1988, the 1st design firm was founded in Guangzhou. - Foreign companies establish local design offices. 	<ul style="list-style-type: none"> - Booming of design firms and designers. - International design consultants enter the Chinese market. 	<ul style="list-style-type: none"> - The internet industry demands for new design discipline.
Design education	<ul style="list-style-type: none"> - Industrial design education based on overseas study. 	<ul style="list-style-type: none"> - Industrial design education started to bloom. 	<ul style="list-style-type: none"> - Growth of quantity.
Design promotion	<ul style="list-style-type: none"> - China Industrial Design Association established in 1979. 	<ul style="list-style-type: none"> - National design awards, Red Star. - Beijing Olympic Games 	<ul style="list-style-type: none"> - Innovation design is included into <i>Made in China 2025</i>.

Note: the table was developed by the authors based on Xihui Liu and Jun Cai, “Design for Development: a Chinese Perspective,” in *Design and Development - After 40 Years* ed. Gabriel Patrocínio and José Mauro Nunes J (Brazil: Blücher, 2015).

In the three paradigms, the role of design, innovation strategy and business focus are varied.

The table 2 illustrates a brief history of Chinese modern design. Professional design emerged in China in the late 1980s accompanied by the booming of the private economy at the first stage of the Open Policy and Reform. The design industry did not become involved until to the beginning of the 2000s, at which time, the value of design in business became recognized.

²⁵ Colin Burns, Hilary Cottam, Chris Vanstone, and Jennie Winhall. "Red Paper 02 Transformation Design." UK: Design Council, 2006.

²⁶ This is based on Roberto Verganti's a series publications of “design-driven innovation” since 2003.

Design management was first introduced in the late 1990s and officially recognized at the beginning of the 2000s, when the topic was explored by a series of discussions in design conferences. To date, design is still viewed as styling of a product or a part of the product development process by the majority of industrial practitioners.²⁷ In interviews conducted in the course of research for the project, top managers stated they understood the value of design and had good design awareness. However, design is seldom incorporated into strategic plans, neither does it lead the innovation activities, or serve as the main power for innovation to enhance business competitiveness. It was only in 2008, 59 years after the establishment of P. R. China, that industrial design was mentioned in a national policy for the first time. Two years later, the first design policy in China was promulgated by the Ministry of Industry and Information (MIIT, Table 3). Since then, industrial design has been recognized as a profession in the service industry and as an independent discipline in the education system.

Table 3. A brief overview of design policy in China

Year		Policy	Main content
2008	General Office of the State Council	<i>The Opinion of the State Council General Office on implementing the Policy Measurement for Accelerating the Development of the Service Industry</i>	Industry design is included in the service industry.
2010	MIIT	<i>Guidance Outline of Industrial Design</i>	Definition of industrial design and suggestion for promoting the same
2012	MIIT	<i>Administrative Measures for the Identification of the National Industrial Design Center (for trial implementation)</i>	Measurement for assessing national industry design center
2014	NDRC	<i>Guiding Opinions of the State Council on Accelerating the Development of Producer Services to Promote Industrial Restructuring and Upgrading</i>	R&D is a main direction of producer service
2014	NDRC	<i>Several Opinions on Promoting the Cultural and Creative Design Services and Integration of the Development of Related Industries</i>	Develop design to enhance seven areas, including manufacturing strength, digital content, etc..

MIIT: Ministry of Industry and Information Technology
 NDRC: National Development and Reform Commission

²⁷ Heskett, J and X.H. Liu. 2012. "Models of Developing Design Capacity: Perspective from China." In *Proceedings of the DMI 2012 International Research Conference*, edited by E. Bohemia, J. Liedtka and A. Rieple, 225-238, Boston, USA:.

New Design Policy: Innovation Design

Funded by the Chinese Academy of Engineering (CAE), a project of exploring strategic design facing to knowledge economy in the Chinese context was conducted from May 2013 to May 2015. The initial research question formulated when the research commenced was: what should be the new role of design in the emerging knowledge economy and what actions should be undertaken as a response to the changed economic paradigm. Through understanding the new content, role and function of design, the project aimed to: 1) facilitate the transformation from “Made in China” to “Created in China;²⁸” 2) support sustainable development of economic; 3) enhance the coordination between government, industry, university, institute, media, user, finance; 4) promote the improvement and prosperity of human society. The final outcomes consisted of two parts, 1) the new definitions of design, referred to as innovation design and 2) new institution to efficiently promote design according to the policy.

Definition of Innovation Design

As a major finding of the research, Innovation Design was seen as a reflection on the design leadership and design-driven innovation in the knowledge economy. The definition is:

Innovation Design is a creative integrated innovation and creation activity. Facing the knowledge economy, it targets industries with the characteristics of green, intelligent network, coordination, and co-creation and sharing. It enables radical innovation of technology, process, management and business model through integrating with science and technology, arts and culture and business based on user-

²⁸ See details of the champion, please check the website
http://english.gov.cn/state_council/ministries/2016/08/31/content_281475429819139.htm

centred design. Innovation design includes various design fields, such as engineering design, industrial design, service design, etc. and combines them with a systematic thinking. As an echo of the 4th industry revolution, it facilitates transforming scientific and technological achievements into productivity.²⁹

Innovation design is the starting point of the industrial chain and nurtures the whole process of product innovation. Through integrating various design fields with technology and an understanding of user needs, it will speed up the transfer between stages in the industrial chain efficiently and sufficiently with a coherent strategy. As a crucial method of dispensing with the low-end of the “smile curve”, and progressing to a high-end value chain, innovation design will guide enterprises to the path of developing independent brand and value-added service. Today, in China, innovation design utilizes new technologies, such as the internet, big data, flexible manufacturing, CPS and cloud computing, to trigger maker, crowd sourcing, crowd funding and new business, such as personalized customized-design manufacturing, to open a new era of entrepreneurship and innovation by the general public.³⁰

Table 4. Comparison of content of industrial design and innovation design

Design	Industrial Design		Innovation Design
Economic Paradigm	Industry Economy	Experience Economy	Knowledge Economy
Domain roles	Manufacturers	Brands and users	Individual, enterprises, ecosystem, society
Driven power	Technology push	Market pull	Design driven
Start point	Manufacturer: Profit	User: Users' needs	Ecosystem: Stakeholders
Current content	Quality of consumer product Design of equipment	Product innovation Brand innovation	Systemic innovation, smart production, service system, business model

²⁹ The definition is translated from the Proposal for Developing Innovation Design to the Centre Government in Jan 2015.

³⁰ This is based on the statement from Prime Minister Keqiang Li about mass entrepreneurship and innovation, which was mentioned by him firstly in the World Economic Forum in Davos in 2014. Later, *Opinions of the State Council on Several Policies and Measures for Vigorously Promoting Mass Entrepreneurship and Innovation* was released on 16 Jun 2015 by the State Council.

Future content	Integrated innovation	System innovation Digitization	Simulations innovation, intelligence, IOT, Green, share technology, digitization
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Note: illustrated by author

Through the comparison with industrial design, the role and objective of innovation design is made more clear (Table 4). It is not only a static activity, but a process of ‘melting’ design into product ideas, creation, production, service, and system formulation. Innovation design is a critical power to push innovation of technology, culture, human needs, arts and business. The objective of innovation design is to promote both a harmonious society and a sustainable economy. Unlike industrial design, which serves the product development process as a professional function or a part of process, innovation design leads strategy planning of businesses, including defining value proposition, selecting appropriate technologies, formulating design business models, and finally, ensuring that the right products are delivered to the markets. As a result, it will contribute to the innovation at four levels, these being process innovation, product innovation, policy innovation and ecosystem innovation.

Innovation Design in Made in China 2025

Made in China 2025 illustrated a road of improving innovation and manufacturing capability within 20 years. The Premier Keqiang Li has stressed in many executive meetings that the “Internet +” model and “going-out” for Chinese equipment manufacturers are two accelerators of the *Made in China 2025* plan, which also calls for an integration of modern manufacturing with the mobile internet, cloud computing and big data. Innovation design is viewed as an efficient solution for realizing the integration. Its directions and path of development were introduced in the third session of *Made in China 2025*. There are four items relating to this.

- (1) Enhancing innovation design capability. Promote advanced technology of green design, intelligent and co-design through sample projects in traditional manufacturing industry, strategic new industries, and modern service industry.
- (2) Enhancing R&D of common and key technologies for design. Emphasizing developing information design, integrated process design, complex process and systemic design. Develop design software with IP to build a better eco-system for innovation design.
- (3) Building several clusters of innovation design with a great impact on the world. Cultivate professional industrial design firms; encouraging manufacturers to build research & design centres to lead the transformation from ODM to OBM.
- (4) Developing education of innovation design. Establish national industrial design awards to actively stimulate and inspire innovation design in the society.

To implement Made in China 2025, *the Three-year Action Plan of Service-oriented Manufacturing (2016-2018)* was unveiled by MIIT on 12 Jul, 2016. In it, innovation Design is defined as the main content of developing service-oriented manufacturing. It is the first policy to clarify the relation between design, innovation and manufacturing. Its target is to develop and utilize design-driven innovation to facilitate transformation and upgrading of manufacturing industry. To facilitate the improvement of innovation design capability, the *Action Plan* emphasizes three areas, specifically, integrated design capability of PSS, co-design network and building infrastructure of innovation design. Items of relevance to each are shown in Table 5.

Table 5. Items of each area of developing innovation design capability

1	Integrated design capability of PSS	<ol style="list-style-type: none"> 1) Basic design capability: product design, service design and systemic design. 2) Design process and methods: technique process design, user participatory design.
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|---|--|--|
| 2 | Co-design network | 3) Co-design network: service outsourcing, co-design, and collaboration network construction. |
| | | 4) New design organization: cloud creation, cloud outsourcing and cloud funds. |
| 3 | Building infrastructure of innovation design | 5) Infrastructure of intelligent service: industry internet, information value-added service, e-business for industries. |
| | | 6) Public service platform for innovation design. |

Note: summarized by author based on the policy

On-going Projects

In addition to being incorporated into *Made in China 2025* and *Three-year Action Plan of Service-oriented Manufacturing*,³¹ the concepts of Innovation Design are being developed further through two, on-going research projects. In the next stage, the focus is on promoting the concepts of innovation design, introducing it into industrial practice, developing tools and methods to support its application, as well as preparing qualified designers and educators of innovation design. The relationships between the research projects and unveiled policies are shown in Figure 1.

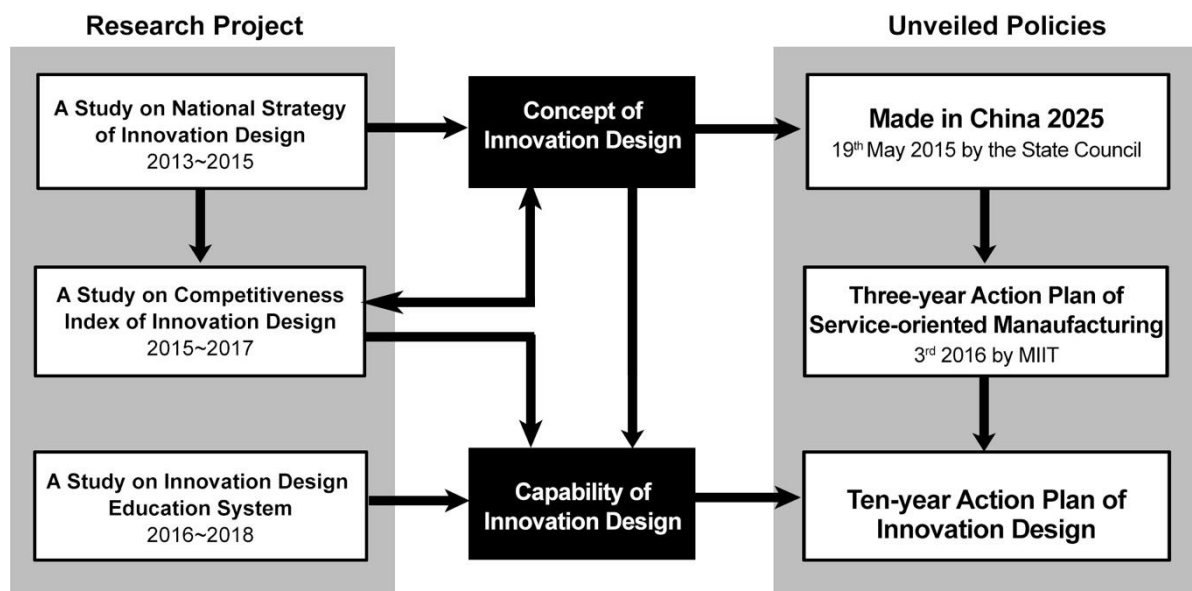


Figure 1. The relationships between research projects and unveiled policies

Note: illustrated by author

³¹ For the detail information of Innovation Design in the Action Plan, please check the website of MIIT: <http://www.miit.gov.cn/n1146285/n1146352/n3054355/n3057292/n3057305/c5164022/content.html>

The first project is *Competitiveness of Innovation Design*, commenced in 2015, after the first project was completed. Competitiveness indexes of industry, city and nation are the major outcomes of this research. It will be used to evaluate the capability of innovation design of a firm, or a city, or a nation. As a key reference for further policy making, the nation index will explicitly define the strengths and weaknesses of innovation design in China through comparison with other countries. With the competitiveness index of a city, it will be possible to compare major cities in China, such as Beijing, Shanghai and Shenzhen, with other major cities in the world. The results will guide the investment of Chinese cities in developing innovation design capability with an emphasis on sustainable and differentiated advantages to remedy excessive investment on hardware. With reference to the subject of differentiation in industries, the index of industry will diagnose the design capability of firms, performance in industries, and offer guidelines to improve innovation design capability for the upper level of economic paradigms. All the indices will contribute to an explicitly defined relationship between innovation design capability and national system of innovation. With it, patterns of R&D investment, support structure and workforce skills of design will be defined to facilitate Innovation-driven Development Strategy.³²

Another research project is *A study on Innovation Design Education System*, which was launched in 2016. The objectives of this research project are to 1) redesign the design education curricula to satisfy the demands from industries with different levels of design capability; 2) redesign the evaluation system of academic staff and student in design schools

³² The Strategy was mentioned in the Eighteenth National Congress of the Communist Party of China at the end of 2012. On May 19 2016, China unveiled a guideline for a national strategy that maps out three major steps to promote the country's innovation-driven development. The document, jointly published by the Communist Party of China (CPC) Central Committee and the State Council, pledges to build China into an innovative nation by 2020, and an international leader in innovation by 2030. For the detail information, <http://www.scio.gov.cn/32618/Document/1478253/1478253.htm>

of universities; 3) design new courses which can be taken as good examples for new design programs, such as design thinking and leadership; and 4) change the mind-set of teachers and encourage their cross-disciplinary and industry collaboration.

A New Mediator of Promoting Innovation Design

A combined approach of top-down and bottom-up was not only utilized in research methods, but also in the implementation of the policy. The institution system of policies implementation consists of three layers. The top layer is the policy-maker, who guides the awareness of design from industry design to innovation design through a top-down approach via unveiled policies. The bottom layer is industrial practitioners, who are the subject of practice. Their understanding, motivation, and willingness in applying design decide the effectiveness and efficiency of the policies. The middle layer is that of mediator, a role which emerged as a result of the research, capable of transferring the concepts from the top down, integrating the resources to carry the new concepts from the bottom up, and facilitate the practice of innovation design with a platform (Figure 3). It is Innovation Design Alliance of China (IADC), which plays the role as the new mediator.

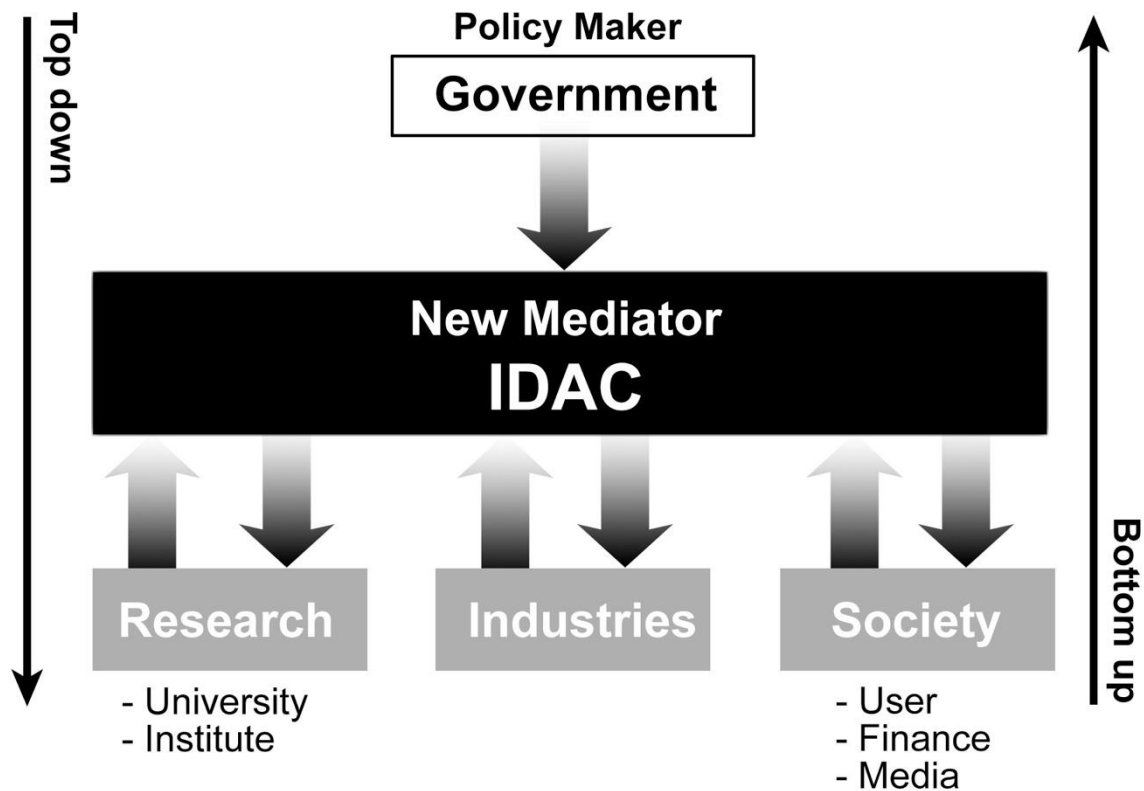


Figure 2. The new institution of the policy based on IDAC

Note: illustrated by author

As an outcome of the research, the Innovation Design Alliance of China (IDAC) was established in October, 2014. Guided by the Government, it is a new organization to promote innovation design through integrating resources from universities, research institutes, the media, finance, users and industry. The committee members consist mainly of researchers in the project to disseminate good practice when introducing innovation design. The mission of the IDAC is:

Guided by the "Two one hundred years" goal,³³ the mission of IDAC is to enhance the innovation design capabilities; accordingly, it promotes transformation from "Made in China" to "Created in

³³ This was stated by Jingping Xi as a "Chinese Dream." The "two 100-year goals" include: building a "moderately prosperous society in all respects" by 2021, when the CPC will celebrate its 100th anniversary; and building an "affluent, strong, civilized and harmonious socialist modern country" by 2049, the 100th anniversary of the People's Republic of China.

China”, and Chinese speed shift to China quality, also Chinese products to Chinese brands. It reinforces the concept of unity between research institutes, universities, industry, the media, users and finance to integrate resources, and build a diversified platform. In the process, it will boost the society's awareness of the value of design, construct a design culture, promote participation in the implementation of the national strategy for innovation design, lead and promote manufacturing, services, brands, value innovation and entrepreneurship. It will create a better life for the Chinese people, and co-create and share both sustainable materials and a spiritual civilization with the world.³⁴

As an open platform, it consists of regional alliances and professional alliances focusing on topics of common interest with a flat structure. Unlike the traditional design organizations, IDAC has developed a new structure for open innovation and efficiently integrated various resources to achieve its target. In the past two years, more and more practitioners from the six areas have joined in the alliance. They select a geographical cluster or a theme cluster, or alternatively, apply for the setting up of a new one. To date, five geographical clusters and two theme clusters have been established. The function and effectiveness of a mediator is significant in the clusters, because all of them established a company on or before the date of the promulgation of related policies. A typical example is the Silk-road Innovation Design Alliance as a mediator to link innovation design with One Belt One Road Initiative.³⁵ With the clusters, practitioners from the six areas can be assembled and their opinions collected as a reference for policy making. With the cluster members, a policy is more likely to be down

³⁴ <http://www.idachina.org/index.php>

³⁵ Liu, Weidong, and Michael Dunford, “Inclusive Globalization: Unpacking China's Belt and Road Initiative.” *Area Development and Policy*, 1. no.3(2016), 323-4.

to earth and be accepted or implemented by industries efficiently. Table 6 shows a matching line between national policies and the established clusters.

Table 6. the clusters built or under-construction in line with national policy

Cluster	Related national policies	Promulgation time	Cluster type
Silk-road Innovation Design Alliance	<i>One Belt One Road</i>	Sept to Oct, 2013	Geography
Maritime Silk-road Innovation Design Alliance	<i>One Belt One Road</i>	Sept to Oct, 2013	Geography
Beijing-Tianjin-Hebei Region Innovation Design Alliance	<i>Coordinated Development for the Beijing-Tianjin-Hebei Region</i>	30 April, 2015	Geography
Yangtze River Delta Innovation Design Alliance	<i>Development Plan of the Yangtze River Economic Belt</i>	28 March, 2016	Geography
Guangdong and Hong Kong Innovation Design Alliance (under construction)	<i>Guidelines on deepening regional cooperation in the Pan- Pearl River Delta</i>	15 March, 2016	Geography
Agricultural Machinery & Equipment Innovation Design Alliance	<i>Development Action Programme of Agricultural Machinery & Equipment (2016-2020)</i>	In progress	Professional fields
General Aviation Innovation Design Alliance	<i>Guiding Opinions of the General Office of the State Council on Promoting the Development of General Aviation Industry</i>	13 May, 2016	Professional fields

Note: summarized by author

IDAC is also responsible for introducing the concept of innovation design to the public. In the past two years, the researchers have studied cases, publishing good cases of innovation design in a series of books, released a newsletter, established the *China Good Design Award*, organized an annual conference and other types of events, such as seminars and fora. Its members studied 146 cases as good examples to show the value of innovation in product system, process, management and business model. The cases were published in a series of books in November 2015, entitled collectively *China Good Design*. IDAC also selected 30 good cases for the First-year China Good Design Award through expert review.

Conclusion

With diverse bases of industries, culture, mind-set and awareness, each country has to design their strategy and plan to adapt the local resources adequately. Unlike other developed countries, China faces to the challenges of developing indigenous innovation with the new economy and emerged technologies, while remedying the weak basis and low capability of innovation in the traditional economy. Rethinking the definition, content and context of design is an opportunity to address the challenge and transfer the pressure into a driving force. This is the background and motivation of *Made in China 2025* and the related research, *A Study on National Strategy of Innovation Design*.

Starting with an understanding of industries as the main body of practicing policies, the research team extended the top-down approach to one which incorporated the bottom-up. The mixed approach was kept throughout the research project and expanded to implementation. In the research process, the research team consisted of front-line practitioners from research, industry, finance and design. The finally report was submitted as expert opinions to the Centre Government and approved by the policy-maker. In this case, the research process was also a process of communicating understanding of innovation design and promoting consideration of design's role in innovation and manufacturing. The IDAC was established as a result of the process, because all the participators were willing to continue the communication and research opportunities for collaboration on the initiative with a platform. In the past two years, the IDAC has proven its value with expanded clusters in both geography and professional terms. This has contributed to a new method for policy-making and a new mediator as a platform for policy implementation.

The studies are on-going, consisting of communication, reflection, ideation, conceptualization, validation and implementation. From the viewpoint of insiders, we review the changed context of innovation and design in China, introduce our consideration behind the policies which were proposed or on-going, and explain the new institutional structure of implementation. This paper is a rare documentation of Chinese design policy, inclusive of its linkage with Innovation-driven Development Strategy and industrial policies.