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## **The Makers Are Coming! China's Long Tail Revolution**

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### **ABSTRACT**

This chapter situates the outbreak of the Maker Movement in contemporary China in the context of national innovation policy, the changing ethos of Chinese educators, and the revisionist take on copy culture (*shanzhai*). The author explores 'change-maker' as an alternative proposal to the ruling paradigm of 'maker as entrepreneur' and investigates several maker projects that have emerged from below as well as the implications of the spread of makerspaces to the national pursuit of creative China.

**KEYWORDS:** maker, makerspace, changemaker, social innovation, creative industries, Chinese national innovation policy, mass entrepreneurship and innovation, Li Keqiang, shanzhai, Chaihuo Makerspace, MyIdol, NGO2.0, Enactus, Tiger Mom

### **Introduction**

In February 2014, the US-based *Tea Leaf Nation*, a news site dedicated to Chinese citizen and social media, published an editorial 'It's official: China is becoming a new innovation powerhouse.' The title should surprise no one well informed of the scale and strategy of China's national innovation policies. Vacillating between an alarmist message that 'the world's factory is turning into an R&D machine' and a consolation sentiment that China will not out-innovate the U.S. anytime soon, the article ponders statistics that seem to work in China's favor. Data reveal a spike in Chinese college graduates, from less than a million in 1999 to almost 7 million in 2013; more revealing however is the fact that 31 per cent of these graduates received engineering degrees, in stark contrast to the 5 per cent engineering degree recipients in the U.S. In addition, other data show the U.S. share of global R&D dropping from 37 per cent in 2001 to 30 per cent in 2011 while China's share jumped from a low 2.2 per cent in 2000 to 14.5 percent in 2011 (Wertime 2014). By way of downplaying these startling numbers, the

editorial draws attention to the weakness inherent in Chinese-style education whereby rote learning is prioritized over creative thinking.

Not is all as it seems, however, and change is a constant in China. While contemplating these issues, I indulged myself in ‘binge viewing’ a popular Chinese TV serial *Tiger Mom* (*huma maoba*) and stumbled upon a catching trend of ‘creative education’. *Tiger Mom*, produced by Tianjin Satellite TV channel, is China’s first serialized drama to pick up on the debates about schooling practices. In a country as heavily populated as China, passing the fiercely competitive college entrance exams has become the overriding goal, if not the only purpose, of education. Should China’s generation of singleton children be put through the ordeal year after year, foregoing their happy childhoods? The episode ratings were surprisingly high and so it is worth asking: why was this kind of drama so popular? Why now?

The story revolves around a city couple—a disciplinarian mom and a low-key dad, their young daughter Qian Qian, and her four grand parents. The family is torn apart on a daily basis by the warring education doctrines of Qian Qian’s caretakers. The audience is led into a battlefield split between exam-score obsessed Confucianists and overseas-trained experts committed to a modern, creative pedagogy. While this was a well-crafted story, I couldn’t wait for the full 46 episodes to unfold to find out the outcome of the competition. So I fast-forwarded to the finale where surprisingly, the militant mainstream ideologists were defeated by the new school of creative thinking; better still, it was an ending accompanied by the conversion of the diehard Confucian grandpa to the camp that trumpets the freedom of the mind and body and the new educational philosophy that emphasizes the necessity of giving children ample space to play and explore, getting their hands dirty, and creating what their heart desires. The ratings success made me wonder if Chinese education is ready to undergo some subtle changes. Indeed, one of the climactic moments in the drama occurs in a conflict between the conservative and modern pedagogues: the daughter’s hand-made, paper-cut mobile is smashed by her incensed grandfather who deems making things instead of studying a total waste of time. The reaction of the audience was revealing: their sympathy went to Qian Qian predominantly.<sup>1</sup>

To put this into context, it’s worth examining the political winds blowing across Chinese national innovation culture. Since January 2015, news reporters have been propagating a new

culture movement initiated by Premier Li Keqiang. In September 2014 and January 2015, in two consecutive meetings of the World Economic Forum in Davos, Li promulgated his now well-known slogan *dazhong chuangye wanzhong chuangxin* (mass entrepreneurship and mass innovation), seamlessly linking grassroots makers with national wealth. According to the premier, ‘every cell in society’ will be activated to innovate: moreover, the ‘twin engine’ of China’s economic growth will rest on a scaled mobilization of individual makers and mass entrepreneurs (Li Keqiang 2015).

Prior to his Davos speeches, a well-planned domestic media blitz accompanied the Premier on his visit to Chaihuo Makerspace in Shenzhen, China’s high-tech manufacturing hub and a frontier of maker revolution. A subsequent series of statements and high-profile events propelled *chuangke*, ‘makers,’ onto the agenda of the Chinese national innovation system. In March, during the annual Two Sessions held by the PRC’s top legislative and advisory bodies, the term ‘maker’ formally entered national policy discourse. Then on May fourth, a historical milestone marking the anniversary of the 1919 student-led New Culture Movement, the Premier delivered another poignant message, this time to the young makers studying at Tsinghua University, the Chinese MIT. Promising to clear up policy obstacles for SMEs, he said ‘making and creating is no longer a privilege reserved for the elites but an opportunity afforded to the greater majority of people’ (Li Keqiang zongli 2015). This measured statement implies nothing less than the shift of the government’s pet policy project from creative industries—a top-down, closed, elitist line-up—to ‘mass entrepreneurship’ which is anchored on open innovation and made available to grassroots actors.

Makerspaces have ‘popped up’—not only in first-tier cities but in Zhengzhou (Henan Province), Guiyang (Guizhou Province), and Ürümqi (Xinjiang Province). The term maker (*chuangke*) has entered the lexicon of new fashionable phrases. The fact that ‘Tiger Mom’ implicitly endorses the ethos of Maker Culture made me wonder whether the show would still be such a crowd pleaser if Premier Li had not championed the maker’s cause. Regardless of the excellent timing of the broadcast though, winning the hearts of Chinese television audiences is no small victory. Children, the subject of this drama, watch the narrative unfold together with their parents and aging grandparents who are often the most stubborn gatekeepers of traditional pedagogy.

In this chapter I want to investigate the status of creativity in China by reflecting on ‘maker culture.’ I begin by first defining the concept and then situating Premier Li’s Maker Initiative in the complex ecosystem of China’s national innovation policy. I examine several makers’ projects that have emerged from below. After scrutinizing the maker-driven startup culture, I argue that the official discourse of ‘maker as entrepreneur’ offers limited value proposition. Only a small handful of young makers turn into entrepreneurs, and an even smaller number of entrepreneurs create businesses that actually hire paid staff.<sup>ii</sup> The coupling of ‘makers’ and ‘entrepreneurs’ produces at best ‘hope value’; it is a bubble that can burst any time.

The second half of this article thus realigns this policy discourse with an alternative term ‘*change-maker*’, i.e., maker as social-change engineer. This does not have to be an either-or proposition. Makers can be both entrepreneurial and socially concerned and this hybrid is already in existence in China. I present examples that have successfully linked maker culture with social innovation programs driven by the utopian vision of young activists, many of whom are involved with nonprofit communities and public interest groups. Three different models of ‘makers as social innovators’ are analyzed: **innovation challenge contests** for problem-solving projects shaped by NGOs and public interest organizations; the **ThankBig Initiative** that sits squarely on youth activism; and **Enactus China**, the national chapter of an international NGO promoting sustainable growth of communities through smart strategies designed collaboratively by college students, academic mentors, and business leaders.

### ‘Makers’ and ‘Makerspaces’

At the outset it’s important to establish a definition of ‘makerspace’ and the Maker Movement. Often associated with democratized innovation, the Maker Movement is inseparable from Web culture: think of garage culture moved to the Net. Chris Anderson identifies four major factors for this flourishing digital DIY movement: the new default of sharing and collaborating online; the appearance of digital desktop tools for hobbyists to design and prototype new products; the birth of Web-based manufacturing model that functions like an on-demand cloud service enabling the emergence of a maker-driven market for one-off products; and the popularity of crowdfunding platforms that are creating a new class of mass investors willing to provide seed money for daring startups (Anderson 2012, 13, 21, 66, 77, 168).

This is not just amateur content creation, but the long tail of manufacturing, a twenty-first century mode of production anyone can access from Web browsers and scale up and down at will. The ‘spaces’ where these wide varieties of niche products are designed, prototyped, and manufactured are called makerspaces—workstations usually stocked up with 3D printers, 3D scanners, laser cutters, and other metalworking and woodworking tools, and in the case of Shenzhen’s Chaihuo Makerspace, open-source computer hardware like Arduino circuit boards. Central to the US concept of maker culture is the quadruple idea of make, create, hack and learn. The Maker movement envisages a renewed interest in learning through tinkering and engineering.<sup>iii</sup>

The Chinese definition of ‘maker’ is essentially functional. *The People’s Daily (renmin ribao)* provides an official interpretation:

Makers are devoted to innovation passionately. They control the production tools themselves. Taking ‘user-innovation’ as a core concept, they excel in discovering problems, unearthing (customer) needs, and providing solutions. Through creativity, design, and manufacturing, they offer a variety of products and services (Yu and Deng 2015).

Conspicuously missing from the definition above are the spirit of collaborative engineering, and predictably, the pleasure principle of hobbyists and the educational perspectives of ‘inventing to learn.’ The emphasis is placed instead on a dry industrialist take on innovation. Significantly, three of the leading makerspaces in China—Chaihuo Makerspace (Shenzhen), Maxpace (Beijing), and XinCheJian (Shanghai, literally, the ‘New Workshop’)—define themselves as *dream factories*; they view makerspaces as venues for hackers to build dream machines,<sup>iv</sup> places where ‘makers from diverse backgrounds gather to brainstorm in teams and create visions,’<sup>v</sup> labs where they can ‘experiment with new technology’ and ‘seek *pleasure* from making things collaboratively,’<sup>vi</sup> and last but not least, open platforms for knowledge sharing and learning.

What then did Li Keqiang find in the makerspace that ignited his embrace of this movement? Whatever it was, it signals a watershed moment in state innovation policy that has embodied, over the past three-decades, a well-focused national pursuit of rebranding China in the image of a creative nation. This triple shift—from ‘made in China’ to ‘created in China’ and now to ‘making in China’—is perhaps a sign that innovation is now a societal concern: every maker should participate in this long tail revolution, not just state designated IT and creative industry clusters.

### **Milestones of Chinese Innovation Policies**

In order to understand the context of Premier Li’s Maker Talks, it’s worth briefly noting China’s catch-up game in innovation policy. Since 1988, a Chinese national innovation system has gradually taken shape. In that year the Ministry of Science and Technology (MOST) rolled out the Torch Program with the aim of establishing Science and Technology Industrial Parks, Software Parks, Science-Tech Business Incubators, and Productivity Promotion Centers.vii A decade later in the wake of WTO accession, the 10th Five-Year Plan (2001-2005) stipulated that R&D funding would be raised to more than 1.5 per cent of GDP (CPC Central Committee 2001). Then in 2006, innovation came centre-stage, the State Council unveiling a mid- to long-term plan (2006-2020) to strengthen China’s science and technology (S&T) development. Under this plan China would be an innovation-oriented nation (*chuangxing xing guojia*) by 2020 with the new leadership of Hu Jintao and Wen Jiabao endorsing the term *zizhu chuangxin* (independent or indigenous innovation) (State Council 2006).

Meanwhile in the cultural sphere the mood was buoyant and policy was being formulated at a rapid pace (see chapters by Keane and Zhang). Spurred on by a compromise term ‘cultural and creative industries’, Blue Books catalogued the excitement with cities racing against each other in reaching output targets; parks and creative clusters mushroomed all over the country.

On the twentieth anniversary of the launch of the Torch Project in 2008, Minister of MOST Fang Gang announced that the Program would undergo major changes, one of which was a strategic shift from S &T centered initiatives to entrepreneurship-centric innovation projects

(Fang 2008). Torch would continue to evolve in 2015 with ‘makerspace’ becoming a sub-category of ‘S&T intermediary organizations’.

All those varying initiatives notwithstanding, China’s national innovation system is not well integrated. Throughout the 2010s, policymakers were to search for a formula of collaborative innovation that would eventually anoint the university as the primary engine for driving multi-sector cooperative networks.

In 2010, the Ministry of Education published a new directive that allowed university science parks to take on the major responsibility of setting up incubators and internship bases to house and train students. Preferential policy treatments included seed funding, tax reductions, and free office rentals for the first twelve months of the launch of a new business (Ministry of Education 2010). To ensure outputs and raise public consciousness about this new initiative, college student innovation contests were broadcast nation-wide by CCTV.<sup>viii</sup> On 24 April 2011, Hu Jintao attended the 100<sup>th</sup> anniversary of the founding of Tsinghua University; his speech unveiled the concept of ‘*xietong chuangxin*’ (cooperative collaboration). Less than a month later, the Ministry of Education and the Ministry of Finance jointly launched ‘Plan 2011’<sup>ix</sup> that lay the infrastructure for strategic networked alliances, under which universities cooperate with peer institutions, the corporate sector, local governments, and international research organizations to engage in national competitions revolving around four innovation categories: advanced science and technology, preservation and reinvention of cultural heritage, sector-specific innovations, and creative design of regional development plan (Ministry of Education 2011).<sup>x</sup>

The impact of the 2010 and 2011 policy decrees changed the innovation landscape of universities at an accelerating pace and laid down a solid foundation for maker policies, which similarly target college students by incentivizing their entrepreneurial engagement. Since that time new academic programs on innovation and entrepreneurship have sprung up in colleges all over the country. Many new ‘Schools of Innovation and Entrepreneurship’ (SIEs) were established in April and May of 2015, following the media feeding frenzy about Li Keqiang’s Shenzhen trip. Guangdong Province, for example, released policies bidding all provincially based colleges to set up SIEs, and in an effort to double or triple the number of student-

entrepreneurs, it allows youngsters interested in establishing startups to take legitimate academic leaves (Lei Yu 2015). All this is crucial to the quickened transformation of college students into makers.

Then came the policies well calculated to unleash the long tail effect of China's grassroots creativity. In June 2015, in response to the Premier's Maker Initiative, Shenzhen took the national lead in publishing a set of experimental policies with the ambitious goal of creating 50 new makerspaces per year to reach a designated number of 200 by the end of 2017 (Shenzhen city committee 2015). This is an unprecedented open call for proposals targeting the entire city. Newly built or existing makerspaces with an expansion plan can receive up to \$833,333 per recipient; an additional \$500,000 is up for grabs for maker labs that wish to make hardware upgrades. Predictably, other cities are following Shenzhen's footsteps and preparing similar policy statements. The most eye-catching prize category is the \$166,666 per recipient to qualified primary and middle schools, higher education institutions, and technical and apprentice schools that demonstrate a sound plan for integrating **maker education** into the curriculum and installing school-based maker labs (idid.) Chinese authorities are apparently mindful of the role creative education plays in moving China up the ladder of innovation nation. Given time, tiger moms may lose their *raison d'être* as the whole society is mobilized to think and make things creatively.

### **Copycat or bottom-up innovation?**

Meanwhile, complaints about the lack of creative impetus behind Chinese education, echoed in the TV serial *Tiger Mom*, are often accompanied by equally pungent criticisms of the *shanzhai* (copycatting) phenomenon. The parallel, critics say, of a nation of rote learners to a nation of imitators producing counterfeit products is a blot on China's aspirations to be a creative nation.

Since the 2010s, however, the ideology of open innovation has paved the way for a revisionist interpretation of *shanzhai* to surface. A report in *Wired UK* describe *shanzhai* practitioners as 'guerrilla innovators' who apply 'as much innovation and ingenuity as their legitimate counterparts.' (Johnson 2010). David Li, co-founder of the maker Space XinCheJian, compares *shanzhai* with 'the Robin Hood spirit' that inspires 'legitimate and often quite innovative

products’ (The Economist 2013). Among the celebrity endorsers of *shanzhai* is Chris Anderson. Calling the bootleg business practice ‘lightweight innovation,’ he echoes David Li’s assessment and equates the phenomenon with the ‘ultimate openness we in the open-source world are looking for’ (Anderson 2012, 212). Proclaiming that ‘a copy can be better than the original’, Rainer Wessler, creative director of Frog Design, asks whether *shanzhai* has proved that the Western approach to innovation is outdated (Wessler 2013).

Claiming that *shanzhai* and Open Source Hardware are ‘twins separated at birth,’ David Li evokes a scenario in which the world of *shanzhai* converges with that of makers (Li, D. 2014). Exactly how that happens however is left for speculation. Silvia Lindtner, co-founder of the Hacked Matter blog, argues that those two phenomena are complementary in essence. In her view, what we are witnessing is a natural partnership built between the founders of Chinese hardware startups (the makers’ businesses) and the erstwhile *shanzhai* factories (Lindtner 2014). If we follow this logic, it appears Shenzhen’s thriving maker culture owes a great deal to the bottom-up infrastructure and network ecosystem put in place by a myriad of *shanzhai* plants over the past decade.

Even if we cannot be conclusive about the tangible link between makers and *shanzhai* pirates, we can dig deeper into what distinguishes homegrown innovation from *shanzhai* by turning our attention to the changing profile of the new generation of innovators themselves. China’s policy preferential treatments for indigenous innovation and university incubators, as detailed in previous pages, have triggered a new round of startup fever embraced by the post-80s and post-90s generation, many of whom are college students or graduates, the twenty- and thirty-somethings. It is important to note however that not all makers are hardware tinkerers since software developers and digital platform builders are also included in the Chinese maker family<sup>xi</sup> The following section illustrates examples of young ‘maker-entrepreneurs.’

### ***Young makers at a glance and homegrown startups***

Long before Premier Li promoted makerspaces, embryonic communities of makers have already sprung up here and there, joined by younger and younger participating members. One of the winning teams in a 2014 China-US maker contest that created “Night Edge”—a laser and ultrasonic musical instrument—was spearheaded by a team of 15 and 16 year old high

school kids<sup>xii</sup>; a Wuxi based makerspace presents a “crazy crab” invented by a third grader who utilized what he learned from BIT@DIY to materialize the talking and crawling functions of the crab.<sup>xiii</sup> Under-age hobbyists aside, China is witnessing the rise of adult makers who are keen to turn themselves into full-fledged entrepreneurs. For example, Jason Wang made his name by raising funds on Kickstarter for Makeblock, an aluminum extrusion based construct platform that provides a set of flexible components — including slots, wheels, sensors, drivers and controllers, timing belts, and motors — for building robotics, machines, toys or even art-ware. When interviewed by Wired, Wang calls this combo kit a “lego for adults” (Finley 2012).<sup>xiv</sup>

Not all 20-something makers are capable of following Jason Wang’s example successfully. An increasing number of makers are creating robots, some are dull inventions like ticket-selling bots in movie theaters. More newsworthy examples are actually platform and software creators. Sun Yan, the founder of SmellMe, is in his thirties, and like typical young entrepreneurs, he is a magnet attracting kindred spirits from the same age group. Sun rounded up an investment of US\$ 7.8 million to roll out China’s first pet social network *wenwen wo*,<sup>xv</sup> a funny name that sounds like ‘smell me’ (Yan 2015). Pet owners can create profiles for their cute animals on the site, post fun snapshots and videos of their furry creatures, set up forum communities for pet-related topics, and consult veterinarians on the site and brainstorm with specialists on pet food, pet nutrition, pet fashion, and pet training. Most interestingly, users can initiate offline activities to plan pet walking in groups or orchestrate breeding schemes. The platform also incorporates features of e-commerce, rewarding dedicated users with in-site currency to purchase pet gifts on Taobao.com. SmellMe can be accessed via mobile apps. It boasts of having a user membership over 5 million.

SmellMe is but one of the hundreds, if not thousands of emerging startups in cities all over China. Where there is a gap in demand, there are competing startups. Venture capital investors are busy signing up carpooling apps, test-prep startups, various Internet-of-Things startups, efficiency apartment finders like Mofang and MogoRoom, services like Wifi Skeleton that unlock free connection to hotspots, on-demand valet parking services, beauticians to the doorstep app, fresh produce e-tailers, smart robot companions for homes, even a medical tourism app that connects Chinese tourists to overseas clinics for cosmetic surgery! With the

boom of interest in online citizen entrepreneurship, new business categories like the training schools for startup zealots have also emerged. Chinaccelerator, a Shanghai based company founded in 2009 has already graduated seven batches of promising startup founders.<sup>xvi</sup>

Sun Yan and his teammates talked about their ambitions to grow SmellMe into an international brand. This brings to mind the meteoric rise of MyIdol, a Chinese startup whose overseas fame overtook its reputation in China. In the spring of 2015, the app broke into the German, U.S., Japanese, and Korean social media space and became the Internet's new obsession. MyIdol is a 3D avatar creator that helps a user to morph his or her face via selfies into computer generated cartoony bodies in self-select, dorky dancing and singing moves. Social feeds of hilarious and sometimes creepy snap shots and avatar pole-dancing videos have spread quickly over Twitter, Instagram, Tumblr, and Vine since April 2015. A favorite of mine is capped 'previously unreleased security footage of Bush gettin jiggy between meetings' on Vine (Luchthegoosey 2015). The fact that foreign users have no clues about what they pick on a menu written entirely in Chinese adds to the thrills of navigating in this 3D avatar milieu.

What is the startup behind MyIdol like? It's not easy to find them online because they seem to revel more in making things than promoting themselves. They are twenty-somethings, more idiosyncratic and creative than Sun Yan's team. When I finally found their site *AvatarWorks*, I was greeted by a unique self-introduction:

'Hi, you probably just found us, a charming company.

She doesn't look like what you expected. She is neither a tech company nor an animation studio, and she's not a games company, either.

She even waited for years before rolling out a single product.

But she has a super cool lab and the best engineers to make high-quality animations and the most playful apps.

She promises to be fun forever' (*AvatarWorks* 2015).

The startup's recent hiring announcement continues the playful speak. Claiming that they are a group of smart and goofy youths, they imagine themselves as an electric-saw wielding Don Quixote riding on a cross-country motorcycle, 'determined to cut off the gigantic windmill and make it our new toy' (*AvatarWorks Hiring* 2015).

### **Change Agents as Makers**

The fun loving Avatar workers, exemplary makers in all respects, bring us back to the twin foci of this article—maker as entrepreneur and an alternative proposal of ‘maker as change-maker.’ If we find in SmellMe a team of entrepreneurs, then in the anonymous MyIdol crew we encounter Premier Li’s ideal Maker—merry making original innovators who have left behind the shadow of copycatting ethos and brought change to a greed stricken startup culture in China.

However, AvatarWorks’ playful employees are not strictly speaking ‘change-makers’. On my cognitive map change-makers aren’t merely engaged in changing corporate culture; they are above all, *civic-minded creative citizens* capable of building a genuinely creative society that presumably occurs at the third stage of China’s ‘creative century plan,’ according to Liu Shifa’s and Li Wuwei’s futurist blueprints (Liu 2006; Li, W. 2011). Where can we spot ‘creative citizens’? And how do we characterize their activities? They are not quite the co-creative drivers of a ‘user-led, demand-side’ knowledge economy as John Hartley has speculated (Hartley 2010, xvii). Nor are they amateur content creators like Hu Ge (the maker of a sensational spoof) emerging from the sphere of ‘grassroots recreation’ in Michael Keane’s terms (Keane 2011, 177-78). The problem is we don’t know much about change-makers with a civic twist because they are completely left out of the vision of Chinese policymakers and mainstream Western media reports about social change in China.

A palpable generational shift is taking place in the nonprofit sector: the 40 and 50-somethings, middle-aged pioneers of Chinese philanthropy, have prized themselves in constructing a purist’s vision of ‘social innovation’, one that is in essence anti-entrepreneurial and oblivious to new tech. The younger generation, especially those nurtured under the state innovation policies, takes a different approach to producing social good. Generally speaking, this new generation is social media savvy and entrepreneurial, and some of them are good at creating IT solutions to pressing social problems. It is a rare breed indeed because it’s hard to be both a thinker and a doer successful in blending the visionary and the practical.

In fact, if I had not worked for six years in China's nonprofit sector and run a nonprofit organization there,<sup>xvii</sup> I would not have had access to the rich literature and sporadically emerging events involving social entrepreneurs of all ages, the most innovative of whom are 20-somethings. Although they are makers whose ingenuity rivals that of the founders of SmellMe and MyIdol, they have escaped mainstream media attention and received no endorsements from Premier Li.

There are currently three notable creative incubators of change-makers in urban China—Cinnovate, Enactus, and ThinkBig. All three share the vision for cross-sector collaboration. Like other grassroots movements, they see the primary source of creativity originating in individuals. Therefore, for Cinnovate, ThinkBig, and Enactus, the starting point to identify talented citizen-individuals is making an open call for creative social strategies.

### *Cinnovate*

In the summer of 2010 I met Joyce Zhou, a passionate, socially concerned manager at Intel Beijing, who subsequently spearheaded a series of social innovation challenges sponsored by her company and supported by foundations and the Ministry of Civil Affairs. Those were China's earliest social innovation tournaments and I was lucky to be involved as a judge for the initial two rounds of contests. The open competitions were part of an impressive corporate social responsibility (CSR) campaign that promoted an Intel style tech-fetishist view that 'Information Technology can advance and expedite social innovation.' The 2010 call for proposals reads, 'Do you know what ICT (Information Communication Technology) means to nonprofit organizations? Metaphorically, it gives wings to compassion and enables it to fly far' (Cinnovate 2010). Initially, contest prizes were given in three categories—Best Tech Development, Best Tech Avant-Guard, and Best Tech Application. In 2011, other categories were added, including Best Collaborative Innovation. Intel China scored big in the public eye with those annual tournaments but they were discontinued in 2013 probably because of mixed results.

Many prizewinners failed to implement their proposed action, and some plans, although materialized, were not sustainable. Qifang Net, a 2010 contest winner, closed down without notice its P2P lending platform serving college students. In 2013, the founder was hunted down

and forced to reckon with angry lenders. The scandal about his delinquency cast a shadow over newly established online philanthropy initiatives. Another 2010 winner, Rescue Minqin, an environmental NGO of which I was and still am strongly supportive, failed to mobilize technology resources to deliver their proposed ‘Plant Virtual Tree’ platform. IT driven solutions are easier said than done. In the early 2010s, e-commerce was just taking off, techies and geeks had not yet formed communities, and cross-sector resources in technology were scarce to say the least. But a few successful pioneers also made their names, bringing public attention to the raw concept of social enterprise.

One of the most celebrated cases of ‘technology as problem solver’ was a 2010 Cinnovate winner, the Qiang Embroidery Help Center. The Qiang Center is an NGO specializing in minority cultural protection funded by Jet Li’s One Foundation. Its earlier incarnation, an occupational service center for the Qiang women, was established in the immediate wake of the devastating Wenchuan Earthquake. Since 2008, the NGO has established embroidery stations one after another in small Sichuan villages with the goal of providing impoverished minority women with sustainable means of livelihood. The number of Qiang embroidery trainees went up to 168,000 in a few years.<sup>xviii</sup> Later, the founder of this organization opened up specialty embroidery retail shops from Chengdu to Suzhou, Beijing, Shanghai, and Taipei, successfully turning the NGO into a social enterprise. They also built a B2C e-commerce store through Taobao.com and a B2B platform on Alibaba.com to reach multiple markets outside the remote county town. By modernizing a craft on the brink of distinction, ICT technology solved the problems of unemployment among rural Qiang women.<sup>xix</sup>

More important, the Qiang Center overcame the difficulty of transporting embroidery instructors to mountainous areas by providing online video trainings.<sup>xx</sup> Without leaving their home and quitting farm work, diligent Qiang women now have access to online instructions. This model of flexible employment was replicated by Qiang embroidery centers in other southwestern provinces—in Guizhou, Xinjiang, and Sichuan where minority women are enlisted to reinvent the Miao, Kesai style, Shu and Tibetan embroidery traditions.<sup>xxi</sup> Digital communication not only popularized skill training at low cost, it also opened a window to the outside world and enriched the information flow in remote minority villages, benefiting not just the embroiderers themselves but other villagers as well.

Sporadic successes notwithstanding, founders of the Cinnovate tournaments soon found themselves caught in a dilemma. Initially set up as a mechanism encouraging grassroots NGOs to use IT means to solve social problems, the Cinnovate Award attracted a large number of government affiliated and well-endowed players in the following years. The integrity of the awards could not but be compromised by the entry of those rich and powerful official organizations that were picked and rewarded for half-baked ideas. Luckily, Cinnovate gained a second life in 2013 by bidding farewell to the contest formula. In its place, a new tradition of ‘Innovation Week’ was launched. Through an assemblage of fun inspiring workshops, speeches, activities, and offline interactive games, the new platform was designed to step up ‘efforts to ignite public interest in emerging models of social innovation’ (Cinnovate Center 2013)

‘Be the change’ is the new motto—Harnessing the creative power of individuals in transforming society was high on the agenda, so is Cinnovate’s desire to build ‘a vibrant social innovation ecosystem’ (Ibid.). The 2013 Innovation Week was said to have drawn one thousand makers, philanthropists, and members of nonprofit communities (Cinnovate Innovation Week 2013), not to mention talent-spotting venture capitalists that began to appear regularly in those events.

Although a praiseworthy pioneer of open innovation challenge contests and the originator of the Chinese term (*chuang bian ke*, literally, maker-changer), Intel was not the only player in the mid-2010s China that promoted the agenda of innovators as changemakers. To be frank, a CSR driven social innovation machine has its own vulnerabilities, among them the hubris of a multinational. A powerful company like Intel can be seen as guilty of paying lip service to ‘cross-sector collaboration.’ For when it comes to brainstorming at the table, its own voice dominates, leaving little room for other partners-in-name to play a significant role in shaping the agenda. In the end, building ‘a vibrant ecosystem’ for new philanthropy needs real and multiple collaborators and a networking vision not bound to a domineering mindset. That’s perhaps the hardest lesson change-making incubators in China have yet to learn.

***En.act.us***

Long before Intel Beijing promoted itself as a catalyst of Chinese social innovation, an international nonprofit organization, Students in Free Enterprise (SIFE), has entered China and worked its way quietly through universities to help student-entrepreneurs create community empowerment projects. But it was not until 2012 when the CEO of SIFE changed its name to En.act.us (Entrepreneurial: Action: Us) that a cross-sector alliance made up of college students, academic advisors, and business leaders finally gained momentum. Working with a large number of leading corporate partners and more than two hundred and twenty-seven membership universities in China, Enactus propagates the idea of leveraging entrepreneurial action to transform the lives of the disadvantaged as a way to enable sustainable social progress. Local Enactus chapters hold regular Business Competitions to identify talented students and train them as socially responsible, future business leaders. The goal is simple but powerful: Enactus student ambassadors make a pledge to leverage viable business concepts to help every person and community in need to ‘live up to their fullest potential (s)’ (Enactus 2015). Considering its enormous reach—14,167 student participants by February 2014—Enactus has made a bigger impact than Cinnovate (Enactus 2014, 15) in mobilizing Chinese youths to get socially engaged. Moreover, regional Enactus champions enter national competitions, and after rounds of tournaments, the winning teams advance to the prestigious Enactus World Cup and are given opportunities to be recruited by sponsoring companies. The three-stage value proposition of the platform—Community Programs, Leadership Connection, and Career Connection—forms a virtuous cycle. No wonder Enactus has grown at such a lightening speed.

Lest you think short-term student outreach projects may be small in scale and its effectiveness not visible, Project Golden Pond will help make a different impression. The project, originated from Sun Yat-sen University, is the brainchild of an Enactus team that assisted tilapia fish farmers in a small Guangdong village in solving a pollution problem that plagued the village for years. Chemical overuse in ponds, isolated farming, and low winter harvests had taken its toll on the 750 families in the region who rely on this practice for their livelihood. After conducting rounds of research, the team discovered that planting ryegrass could bring villagers multiple benefits: it could improve the ecosystem of the ponds, enable the farmers not only to earn extra incomes by selling the grasses but also create a new sideline business that supplies grass feed to local rabbit and cattle operations. Needless to say, since the implementation of

Golden Pond Project, ‘the average summer fish yield has risen from 18 tons to 23 tons’ (Enactus 2015). Previously arid land is now utilized to plant ryegrasses.

The Golden Pond project sounds almost like a fairytale. It is above all a case study that reminds us of a blind spot of techno-determinists: *not* all social problems call for technological solutions. The project also drives home the core value of Enactus’ vision that entrepreneurial spirit and practice can transform people’s lives. No less important, the success of Enactus foregrounds the importance of youth activism in China today.

Most of the time when we speak of urban youths, we think of them not as social change agents but consumers of cool fashion, hip hop, and animation. Marketers have churned out one study after another pondering how Chinese youths view luxury, drawing a very partial picture of China’s millennials. The reality is more complex and less visible. Truly, if I had not created NGO2.0, a nonprofit organization that provides social media literacy training to grassroots NGOs (Wang, J. 2015), I would never have imagined the existence of the *other China* where idealistic urban and rural youths are busy weaving their dreams as social engineers. Having trained and getting to know hundreds of post-80s and post-90s NGO workers at our digital literacy camps (NGO2.0 2015), I now have a glowing faith in a kinder China to come. Just like NGO2.0’s training camps that bring together like-minded youth activists, Cinnovate and Enactus provide a space for young activists to meet, collaborate, and form a community, which is where the real value of creative incubators lie. We all know that maker-entrepreneurs follow the law of the jungle, but change-makers thrive on collaboration.

### ***ThinkBig***

The Internet is filled with reports and academic papers on the connection between youth organizations, social action, and social movements in democratic societies. Chinese youth activists share the same utopian ideals like their Western counterparts and are deeply involved in a quest for equity and social justice, but they have to navigate carefully to stay clear of political landmines. Street demonstrations are certainly off-limits in China, but the state is tolerant of social service initiatives which are often equated with poverty alleviation and other state-endorsed social welfare categories. Mindful of the limits set for youth activism in China, Cinnovate and Enactus, both of which have international origins, put their programmatic emphasis on innovation and entrepreneurship, which is after all a state endorsed policy

imperative over the past three decades, as I detailed in the first half of this chapter. Like all ‘grassroots’ activities in China, both platforms can function with relative political immunity probably because they have made partnership with state organizations.<sup>xxii</sup>

I noted earlier that Enactus is perceivably a more influential platform than Cinnovate. Not only does it reach out to young people while they are still in their formative years, it doesn’t target affluent regions exclusively. A glance at the list of the 227 membership universities reveals that Enactus cast its net far into western and central provinces, the less developed regions of China (Enactus 2014).

ThinkBig Initiative (*Zhongguo qingnian chuangxiang jihua*), the third model, is an indigenous Chinese incubator sponsored by a Hainan based corporate foundation committed to social innovation. It offers a slightly different model than Enactus and Cinnovate by prioritizing ‘philanthropy’ over ‘entrepreneurship’. If we examine the origin of each of the three social innovation incubators, Cinnovate is the CSR arm of Intel, Enactus is backed by an international NGO, and ThinkBig is a young project supported by an indigenous Chinese company that bears no visible link to the government and is operated by YouThink Center, a Chinese NGO, itself specializing in the sustainable development of youth activism. I take a special interest in ThinkBig because of its grassroots DNA. When I clicked open its website, I was greeted with this description: ‘Based on our conviction that the individual is the primary target of our investment, we congregate and support young changemakers, and provide venture capital to youth philanthropy projects and youth driven social enterprises’ (ThinkBig 2015).

I am delighted to find that the YouThink Center has taken over Cinnovate’s slogan ‘maker-changer’ and fleshed it out with the ThinkBig project. Their main program is made up of five components—capacity training, international networking, project promotion and advocacy, youth community building, and incubating and investing. Founded in 2013, the Initiative is only two years old. It has yielded 74 changemakers with a large percentage of talents concentrated in big cities. It’s too early to tell if ThinkBig enjoys the kind of competitive advantage that can help them develop a sustainable community of young change-makers. The first two batches of funded projects span across multiple NGO issue areas such as welfare for the handicapped, legal assistance, children’s education, post-disaster psychiatric help,

environmental protection, cultural preservation, AIDs and other health related issues, welfare for the elderly, urban and rural community development, animal protection, migrant workers, peasant employment, as well as a wide variety of youth activist categories. Not all projects fall into strictly defined maker categories. However, NGO2.0 and ThinkBig are planning a hackathon event whereby techies and interaction designers will be working side by side with ThinkBig youth activists to identify social problems that are susceptible to maker interventions.

## **Conclusion**

The maker movement was a missing piece in the puzzle of Chinese innovation policy until spring 2015. Whether we are speaking of maker entrepreneurs or maker as changemaking citizens, it is obvious that the government has now discovered the value of the individual, creative self-expression, and grassroots energy in transforming Chinese economy and society. Creative industry clusters have come under the spotlight and it is now evident that they are not conducive to building a robust creative economy. Li Keqiang's maker slogan reminds policy pundits that a national innovation system is an ecosystem that needs to accommodate both the top-down superhighway approach and the messy centrifugal, bottom-up pathway that falls outside the purview of central planners. Where this new trend of democratized innovation will lead however is unclear. Whether the maker policy will succeed in reducing the high unemployment rate of college graduates is also unpredictable.

Meanwhile, the intrusion of an official discourse into an organic cultural phenomenon inevitably provokes anxieties, especially in the mind of purists. I have examined elsewhere the conceptual trap of dichotomous thinking in analyzing China. Binary pairs such as domination vs. resistance, state vs. society, communism vs. capitalism, power vs. subjugation, and the official vs. the grassroots, carry little analytical weight when they are applied to the Chinese case (Wang J. 2001: 98-99). We have already seen how Cinnovate and Enactus, both international entities, thrive in China in spite of, or perhaps because of, their formal partnership with governmental organizations.

One thing is certain: makerspaces will proliferate in China thanks to the government's blessings. Nobody can tell if a hundred potent ideas—and start-ups—will spring out of those state funded creative spaces. Will these suffer the same fate as the hundreds of lackluster

creative industry clusters? But that is beside the point. Perhaps we should all look elsewhere, to education, for clues about how to assess the productivity of a state-cosigned maker movement. There is ample evidence that something dynamic is happening in places out of media reach. Enthusiastic members of Chaohuo Makerspace are setting up colorful popup stations in shopping plazas, attracting kids and curious families. Universities are by no means the only privileged venues where makerspaces can systematically spread. Rudimentary makerspaces emerged long before 2015 in elementary schools and junior and middle highs, representing a less publicized grassroots effort made by tech enthusiast schoolmasters to introduce maker culture to the next generation: ‘teaching children skills needed in a makerspace and let children build what they want’ (Xie 2014; Wang Y. 2015: 81). Most surprisingly, the prototypes of “maker education” are found not only in prestigious schools but also in schools of less developed regions (Wang Y. *ibid.*). The onset of this phenomenon appears to be an attempt initiated by maker-teachers voluntarily.

Meanwhile creative education software is flooding into the market; among these are Yuantiyk (a mobile exam coping software), Vipkid (an English learning app), Xueba (a homework answering tool), Mofangge (a crowdsourced learning app), and Geek Academy, a virtual IT university that exposes students in middle high and universities to playful learning routines. Chinese students are now given various creative means to improve their educational capital. Imagine a motion sensing software Hip-hop Tech that targets preschoolers! If Chinese makers continue the speed of producing innovative online education aids, and if primary and secondary school pupils are drawn to campus makerspaces, creative education will be a catching trend hard to stop even in the kingdom of rote learners. One has to wonder, if those erstwhile bookworms are transforming themselves into happy learners and creative thinkers, can a creative China be far from reach?

This article situates contemporary China’s maker movement in the larger context of the Chinese national innovation system and unravels the double personae of maker—its entrepreneurial self and the activist self. In 2011, Michael Keane asked: ‘How can we understand creativity in a way that accommodates policy and business while still engendering a sense of change, of variety, or value?’ (Keane 2011: 169). The answer to Keane’s prescient question lies in the steady rise of changemaker communities in urban China. Perhaps given

time, Premier Li will be advocating a new maker culture that commends not only maker-entrepreneurs but the numerous changemakers and their happy emulators who are seizing opportunities to make the crown jewels of a creative society—social wealth and social good.

## Bibliography

Anderson, Chris, 2012. *Makers: The New Industrial Revolution*, New York: Crown Business.

AvatarWorks, 2015. ‘About us,’ <http://www.avatarworks.com/>, accessed in June 2015.

AvatarWorks Hiring, 2015. <http://special.zhaopin.com/pagepublish/48361852/index.html>, accessed in June 2015.

China-US Young Maker Competition, 2015. “Night Edge,” <http://www.chinaus-maker.org/staff/visible-interactive-electric-instrument/>. Accessed in July.

Cinnovate, 2010. ‘‘Xin shijie’ gongyi chuangxinjiang pingxuan huodong jieshao’ (Introduction to Cinnovate’s social innovation contest,’ Sohu.com, <http://gongyi.sohu.com/20100114/n269582374.shtml>, January 14.

Cinnovate Center, 2013. Promotion pamphlet.

Cinnovate Innovation Week, 2013. <http://www.huodongxing.com/go/siw>.

CPC Central Committee of the Chinese Communist Party, 2001, ‘zhonghua renmin gongheguo guomin jingji he shehui fazhan di shige wunian jihua gangyao’ (The Essentials of the 10<sup>th</sup> Five-Year Plan of the National Economic and Social Development of the PRC), <http://www.china.com.cn/ch-15/15p8/2.htm>.

The Economist, 2013. 'Made in China.' <http://www.economist.com/news/technology-quarterly/21590756-technology-and-society-china-has-its-own-distinctive-version-maker-movement>, Nov. 30.

Enactus, 2015. <http://enactus.org/project/project-2/>, accessed in June 2015.

Enactus, 2014. 'Enactus China Program: 2013-2014.' A promotion pamphlet.

Fang Gang, 2008. "Huoju jihua yao chengwei jianshe chuangxinxing guojia de yindao liliang" (Torch will become the guiding force for building an innovation nation), <http://scitech.people.com.cn/GB/126054/141612/141614/8585872.html>, December 26.

Finley, Klint, 2012. "Robotics Hacker Erects Open Source 'Lego for Adults,'" *Wired*, <http://www.wired.com/2012/12/makeblock/>. December 13.

Hartley, John, 'Foreword: Whose creative industries?' 2010. In Lucy Montgomery ed., *China's Creative Industries: Copyright, Social Network Markets and the Business of Culture in a Digital Age*. Edward Elgar: UK and MA., USA. vi-xxvii.

Johnson, Bobby, 2010. 'Shanzai,' *Wired UK*. <http://www.wired.co.uk/magazine/archive/2011/01/features/shanzai>, December 7.

Keane, Michael, 2011. *China's New Creative Clusters: Governance, Human Capital and Investment*. Routledge: London and New York.

Lei Yu, 2015. 'Guangdong guli gaoxiao chengli chuangxin chuangye xueyuan' (Guangdong province encouraged colleges to establish innovation and entrepreneurship schools), [http://tech.southcn.com/t/2015-04/01/content\\_121305369.htm](http://tech.southcn.com/t/2015-04/01/content_121305369.htm), April 1.

Li, David, 2014. 'The New Shanzhai: Democratizing Innovation in China,' *ParisTech Review*, <http://www.paristechreview.com/2014/12/24/shanzhai-innovation-china/>, December 24.

Li Keqiang, 2015. ‘Chinese Premiere Li Keqiang’s Speech at 2015 Davos,’ ‘Uphold Peace and Stability, Advance Structural Reform and Generate New Momentum for Development,’ World Economic Forum, <https://agenda.weforum.org/2015/01/chinese-premier-li-keqiangs-speech-at-davos-2015/>, January 21.

‘Li Keqiang zongli wusi qingnian jie gei Tsinghua daxue xuesheng chuange huixin’ (Premiere Li Keqiang replies to the Makers of Tsinghua University on May Fourth), 2015, [http://news.tsinghua.edu.cn/publish/news/4204/2015/20150504162305504431629/20150504162305504431629\\_.html](http://news.tsinghua.edu.cn/publish/news/4204/2015/20150504162305504431629/20150504162305504431629_.html).

Li Wuwei, 2011. *How Creativity Is Changing China?* Ed., Michael Keane, Bloomsbury Academic: New York.

Lindtner, Sylvia, 2014. ‘Hacking Shenzhen,’ *The Economist*. <http://www.economist.com/news/special-report/21593590-why-southern-china-best-place-world-hardware-innovator-be-hacking>, Jan. 18.

Liu Shifa, 2006. “Shishi chuangyi shiji jihua, kaizhan chuangyi Zhongguo xingdong” (Implementing the creative century plan, developing the creative China campaign), [http://blog.sina.com.cn/s/blog\\_506135de01008hgr.html](http://blog.sina.com.cn/s/blog_506135de01008hgr.html).

Lucythegoosey, 2015. <https://vine.co/v/ea1MbxW6q71>, April 21.

Ministry of Education, 2010. ‘Jiaoyu bu guanyu dali tuijin gaodeng xuexiao chuangxin chuangye jiaoyu he daxuesheng zizhu chuangye gongzuodiyijian’ (Opinions on the work by the Ministry of Education in advancing the education programs of innovation and entrepreneurship in universities and in facilitating self-employment of college students), <http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/s4531/201105/120174.html>, May 4.

Ministry of Education and Ministry of Finance, 2011. ‘2011 xietong chuangxin zhongxin jianshe fazhan guihua’ (The Development Guidelines for the Construction of the 2011 Cooperative Innovation Center Plan),

<http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/s7062/201404/167787.html>, accessed in June 2015.

NGO2.0, 2015. <http://www.ngo20.org/en/workshops>, accessed in June 2015.

Shenzhen City Committee of IT Innovation, 2015. “Shenzhen shi renmin zhengfu guanyu yinfa cujin chuankel fazhan ruogan cuoshi (shixing) de tongzhi” (Shenzhen city government’s announcement of experimental policies regarding the acceleration of the development of makers), <http://www.szsti.gov.cn/info/policy/sz/106>, June 17.

The State Council of PRC, 2006, ‘Guojia zhong chang qi kexue he jishu fazhan guihua gangyao (2006-2020)’ ( The Essentials of China’s Fifteen-Year Plan for Science and Technology) , [http://www.gov.cn/jrzq/2006-02/09/content\\_183787.htm](http://www.gov.cn/jrzq/2006-02/09/content_183787.htm).

ThinkBig, 2015. <http://www.thinkbig.org.cn/website/aboutus.html>, accessed in June 2015.

Wang, Jing, 2001. ‘Culture as Leisure, Culture as Capital,’ *positions: east asia cultures critique*, 9:1, 69-104.

\_\_\_\_\_, 2015. ‘NGO2.0 and Social Media Praxis: Activist as Researcher,’ *Chinese Journal of Communication*, 8:1, 18-41.

Wang, Yu, 2015. Heike, Jike, Chuankel: Creativity in Chinese Technology Community. Master of Science thesis, MIT. <http://cmsw.mit.edu/heike-jike-chuangke-creativity-chinese-technology-community/>.

Wertime, David, 2014. “It’s Official: China is becoming a new innovation powerhouse,” *Tea Leaf Nation (Foreign Policy)*, <http://foreignpolicy.com/2014/02/07/its-official-china-is-becoming-a-new-innovation-powerhouse/>, February 7.

Wessler, Rainer, 2013. “Shanzhai’s Role in Innovation Strategy,” *Insights China*, Collection No. 1, <https://designmind.frogdesign.com/2013/04/shanzhais-role-innovation-strategy/>.

Xie Zuoru, 2014. ‘Zhongxiaoxue chuangke kongjian liebiao’ (List of elementary and middle school based makerspaces), Sina microblog,

[http://blog.sina.com.cn/s/blog\\_6611ddcf0102v7qt.html](http://blog.sina.com.cn/s/blog_6611ddcf0102v7qt.html), November 9.

Yan Xia, 2015. ‘Wenwen wo Sun Yan: yizhi gou yinfa de1 chuangye gushi’ (SmileMe’s Sun Yan: a story about entrepreneurship triggered by a dog), <http://www.kusocial.com/22121>, June 10.

Yu Jianbin and Deng Wei, 2015. ‘‘Chuangke’ yuanhe yin zongli dianzan’ (Why did Makers receive endorsement from the Premiere?), <http://politics.people.com.cn/n/2015/0319/c1001-26715378.html>, March 19, 2015.

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<sup>i</sup> See discussions about this TV serial on Chinese social media platforms. There are some lone defenders of the grandpa’s action, but the majority of public opinions are partial to Qian Qian.

<sup>ii</sup> The average number of employees per U.S. firm (with or without payroll) is just four! See Chris Rabb, *Invisible Capital: How Unseen Forces Shape Entrepreneurial Opportunity*, San Francisco: Berrett-Koehler Publishers, 2010, p. 1.

<sup>iii</sup> Sylvia Libow Martinez and Gary Stager, *Invent to Learn: Making, Tinkering, and Engineering in the Classroom*. Constructing Modern Knowledge Press: New Hampshire. 2013.

<sup>iv</sup> Beijing Maxpace on Douban, <http://site.douban.com/124037/>, accessed in June 2015.

<sup>v</sup> Chaihuo Makerspace, <http://maker.eefocus.com/makerspace-orgnization/chaihuomakerspace>, accessed in June 2015.

<sup>vi</sup> Xin Che Jian, <http://xincejian.com/about-2/?lang=zh>, accessed in June 2015.

<sup>vii</sup> This embryonic system developed as China acceded to the World Trade Organization and subsequently modernized its corporate governance structure, shifted investments from industrial to knowledge-based economy, and improved key framework conditions for innovation, including making a commitment to enforcing intellectual property rights protection.

<sup>viii</sup> [http://v.youku.com/v\\_show/id\\_XNTM0MDA0OTIw.html?from=y1.2-1-105.3.4-2.1-1-1-3](http://v.youku.com/v_show/id_XNTM0MDA0OTIw.html?from=y1.2-1-105.3.4-2.1-1-1-3);  
[http://v.youku.com/v\\_show/id\\_XMTEyMDM0ODYw.html](http://v.youku.com/v_show/id_XMTEyMDM0ODYw.html);  
<http://tv.sohu.com/20141105/n405785309.shtml>;  
[http://v.youku.com/v\\_show/id\\_XMTgwOTcwNTMy.html](http://v.youku.com/v_show/id_XMTgwOTcwNTMy.html)

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<sup>ix</sup> It is worth noting that Plan 2011 is an extension of Project 211 and Project 985, reform projects that focus on the development of talents and other innovation elements confined within the university.

<sup>x</sup> One of the grant recipients is the Future Media Collaborative Innovation Center set up jointly by Shanghai Jiaotong University and Peking University in 2012, with partners spanning across the broadcasting, TV, information and communication, and Internet service sectors. It pulled in resources from a number of ministries—i.e., the Ministry of Education, MOST, SARFT, National Development and Reform Commission, and Standardization Administration of China. The resource sharing among ministries on such a grand scale speaks of its own symbolism—cross sector collaboration is no longer a theory and it also underscores the future direction of China’s innovation plan. See Mai Qi, 2014. ‘Shanghai jiaoda weilai meiti wangluo xietong chuangxin zhongxin huo guojia rending’ (Shanghai Jiaotong University’s future media network cooperative innovation center received recognition from the state), <http://bc.tech-ex.com/2014/exclusivenews/57780.html>. Oct. 22.

<sup>xi</sup> Chinese people are rather loose about the definition of makers, which include both hardware and software makers. Please see the definition of maker in <http://baike.baidu.com/subview/371405/11140298.htm>.

<sup>xii</sup> You can find the description of “Night Edge” on the website for “China-US Young Maker Competition, see <http://www.chinaus-maker.org/en/staff/visible-interactive-electric-instrument/2014>.

<sup>xiii</sup> This crab was highlighted on the website for Shenzhen Maker Faire, <http://www.shenzhenmakerfaire.com/szmf2014/post/category/workshop>.

<sup>xiv</sup> In April 2015 after receiving \$6,000,000 from investors, his company grew from four founding members to a team of 80 employees.

<sup>xv</sup> See <http://smellme.cn/index.html>.

<sup>xvi</sup> Not all China originated startups are founded and owned by indigenous Chinese inventors, for example, Origins, whose Mandarin speaking Swiss founder announced a cool, palm-sized solution to affordable air pollution monitoring. I did not include those foreign startups in the catalog listed above because my research focus is on homegrown innovation.

<sup>xvii</sup> In 2009, I founded NGO2.0, a nonprofit organization that specializes in social media literacy training and nonprofit technology. For details, see [www.ngo20.org](http://www.ngo20.org).

<sup>xviii</sup> By April 2012, the Aba County held one hundred forty-one training sessions and trained 16800, among them eight thousand women mastered the skill. For details, see Wang Shuang, ‘Zhenhou chongsheng qiangxiu , baqian xiuniang liaode’ (The Rebirth of the Qiang Embroidery after the Earthquake: Eight Thousand Embroiderers One Thumbs Up), [http://sichuan.scol.com.cn/dwzw/content/2012-04/06/content\\_3572849.htm?node=968](http://sichuan.scol.com.cn/dwzw/content/2012-04/06/content_3572849.htm?node=968), April 6, 2012. Accessed in December 2013.

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<sup>xix</sup> ‘Qiangxiu bangfu zhongxin: Zhuiqiu youxian lirun jiejie shehui wenti’ (In pursuit of limited profits to solve social problems), Huanqiu Net, <http://hope.huanqiu.com/exclusivetopic/2013-10/4395825.html>, October 1, 2013. Accessed in December 2013.

<sup>xx</sup> ‘Abei zhou funu Qiang xiu jiuye bangfu zhongxin: Qiangxiu bangfu jihua’(Abei County’s Qiang Embroidery Occupation Help Center: The Qiang Embroidery Project, Sohu.com, <http://gongyi.sohu.com/20100330/n271211916.shtml>, March 30, 2010. Accessed in December 2013.

<sup>xxi</sup> See ‘Qiangxiu bangfu zhongxin.’

<sup>xxii</sup> Enactus has a partnership with Chinese People’s Association for Friendship with Foreign Countries (CPAFFC), and Innovate’s governmental partner is the Ministry of Civil Affairs. The depoliticized nature of CPAFFC made it much easier for Enactus to expand.