

**Liminality, Ephemerality, and Marginality with Impact
Makerspaces in the Chinese Urban Fabric:
Shanghai, Shenzhen, Beijing, and Addis Ababa**

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Title picture: Maker Faire Beijing 2016, manual reprinting of event logo by author © author

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Liminality, Ephemerality, and Marginality with Impact Makerspaces in the Chinese Urban Fabric: Shanghai, Shenzhen, Beijing, and Addis Ababa

Abstract

In the last few years, narratives and imaginaries about maker cultures as well as makerspaces have been flourishing in Chinese cities. With its fast-changing pace, the global maker movement expresses unique features in China and integrates aspects of grassroots and governmental initiatives. Liminal and ephemeral communities of innovation and their spaces represent an opportunity for change for the people, cities and systems in which they flourish. Individuals tinkering and working in these shared spaces, which encourage empowerment, knowledge exchange and self-development, change and evolve, while governmental efforts and initiatives show the need for change in their societal and urban project. Makerspaces, Fab Labs, hackerspaces, innovation labs and events such as Maker Faires, Maker Carnivals or Hackdays, grow allowing a marginal movement to create a strong urban imaginary.

How can innovative methods of research be developed to capture the dynamics of such a culture? What is the impact of the government's interest in bringing new narratives supporting innovation into these maker movements? Where are the makerspaces part of the narrative and the urban imaginary in China? What are the Chinese specificities of this global movement?

Access to Internet, connections between people and networks grow, hierarchies change, narratives about innovation evolve and are shaping societal urban projects. The Chinese maker culture, close to entrepreneurship, co-creates partnerships and projects worldwide, for example the "Designed in Ethiopia" initiative.

Keywords: Makerspaces, maker culture, innovation, China, urban fabric, co-optation, governance, liminality, empowerment, Africa

Liminalité, éphémérité et marginalité avec impact

Les makerspaces dans le tissu urbain chinois : Shanghai, Shenzhen, Pékin et Addis Abeba

Résumé

Les discours et imaginaires autour des cultures maker et des *makerspaces* ont proliférés ces dernières années dans les villes chinoises. Ses caractéristiques uniques en Chine intègre des aspects des initiatives gouvernementales et populaires. Les communautés et les espaces d'innovation liminaux et éphémères représentent des moments de transition pour les individus, les villes et les systèmes dans lesquels ils se développent. Les changements sont rapides et constants et sont reflétés dans l'évolution des vies et des projets des makers qui bricolent et travaillent dans ces espaces partagés. En même temps, les efforts et initiatives gouvernementaux montrent le besoin de nouveautés dans leur projet sociétal et urbain. Les *makerspaces*, *Fab Labs*, *hackerspaces*, *innovation labs* et autres événements tels que *Maker Faires*, *Maker Carnival* ou *Hackdays* évoluent et permettent à un mouvement relativement marginal de créer un imaginaire urbain fort.

Comment développer des méthodes de recherche innovantes afin de capturer les dynamiques d'une telle culture ? Quel est l'impact de l'intérêt gouvernemental qui apporte un nouveau discours soutenant l'innovation dans ces mouvements maker ? Où sont les makerspaces qui font partie du discours et de l'imaginaire urbain en Chine ? Quelles sont les spécificités chinoises de ce mouvement global ?

L'accès à Internet, les connexions entre les personnes et les réseaux grandissent, les hiérarchies changent, les discours sur l'innovation évoluent et forment des projets urbains et sociétaux. La culture chinoise maker, proche de l'entrepreneuriat, co-crée des partenariats et des projets dans le monde, telle que l'initiative « Designed in Ethiopia ».

Mots-clés : Makerspaces, culture maker, innovation, Chine, tissu urbain, cooptation, gouvernance, liminalité, autonomisation, Afrique

合法性, 短暂性, 边缘性影响下的 中国城市空间结构中的创客空间： 上海，深圳，北京和亚的斯亚贝巴

摘要

近几年来，关于创客文化和创客空间的叙述和想象力在中国城市中蓬勃发展。全球创客运动在中国发展迅速并且与草根以及政府的动议等方面相互融合，展现出了一番独特的风貌。创新的边缘社区和临时社区及其空间为其中的人、城市以及他们所在的系统的转型树立了里程碑。当政府在社会和城市项目上寻求改变的同时，这些共享空间鼓励赋权、知识交流和自我发展，变革和发展，个体们则在其中精耕细作。创客空间、Fab实验室、黑客空间、创新实验室以及创客集市、创客嘉年华或黑客日等活动不断演变，使得一个相对边缘化的运动能够创造出一个强大的城市想象。

如何发展创新的研究方法来捕捉这种文化的动态？政府有意在这些创客运动中引入支持创新的新叙述方式，这会产生什么影响？这些创客空间在中国的这些叙事和城市想象中处于怎样的位置？这场全球运动的中国特色是什么？

互联网接入度以及人与网络的连结不断增长、层级发生变化、关于创新的叙述不断演变，并正在塑造社会化的城市项目。中国这种近似于创业精神的创客文化，在全球范围内正共同创建着合作伙伴关系和项目，比如“埃塞俄比亚设计”计划。

关键字：创客空间，创客文化，创新，中国，城市结构，合作选择，治理，自由化，赋权，非洲

Liminalität, Kurzlebigkeit und Marginalität mit Wirkung Makerspaces im chinesischen Stadtgeflecht: Shanghai, Shenzhen, Beijing, und Addis Abeba

Zusammenfassung

Diskurse (*narratives*) und Imaginationen (*imaginary*) über Maker-Kulturen und *Makerspaces* in chinesischen Städten florieren in den letzten Jahren. Die Maker-Bewegung in China, welches mit seinem schnelllebigen Tempo Initiativen sowohl der Bevölkerung als auch der Regierung vereint, weist eigene Besonderheiten auf. Liminale und ephemere Innovationsgemeinschaften und ihre Räume repräsentieren Impulse des Wandels für die Bevölkerung, die Städte und die Systeme in denen sie entstehen. Individuen, die in diesen gemeinschaftlichen Räumen arbeiten und damit Selbstbestimmung, Wissensaustausch und Eigenentwicklung fördern, verändern und entwickeln sich. Zugleich zeigen Initiativen von Seiten der chinesischen Regierung, die Notwendigkeit von Wandel in sozialen und urbanen Projekten. Zahlreiche *Makerspaces*, *Fab Labs*, *hackerspaces*, *innovation labs* und häufige Veranstaltungen wie *Maker Faires*, *Maker carnivals* oder *Hackdays* verdeutlichen, wie eine vergleichsweise kleine Bewegung eine ausgeprägte Präsenz entwickeln kann.

Wie lassen sich innovative Forschungsmethoden entwickeln, um die Dynamiken einer solchen Kultur zu erfassen? Was ist der Einfluss der Regierungsinteressen durch das Einbringen neuer Diskurse für die Unterstützung der Innovation in diesen Maker-Bewegungen? In welcher Weise sind Makerspaces Teil dieses Diskurses und der urbanen Vision in China? Was sind die China-spezifischen Besonderheiten dieser globalen Bewegung?

Der Zugang zum Internet, zwischenmenschliche Beziehungen, sich ausweitende Netzwerke und neue Hierarchien lassen Diskurse über Innovation entstehen und formen soziale urbane Projekte. Die chinesische Maker-Kultur, welche Aspekte von Unternehmertum vereint, entwickelt Partnerschaften und weltweite Projekte, wie beispielsweise die "Designed in Ethiopia" Initiative.

Schlagwörter: Makerspaces, Maker-Kultur, Innovation, China, Stadtgeflecht, Kooption, Unternehmensführung, Liminalität, Selbstbestimmung, Afrika

Index

Foreword.....p. 20

Introduction.....p. 22

The storyp. 24

Communities of innovation in a dense urban fabric.....p. 24

Urban China – a context.....p. 25

Places of interest.....p. 29

Thesis outline and hypotheses.....p.32

Explicative note.....p. 34

Chapter 2 Makerspaces in the Chinese urban fabric	p. 40
Makerspaces in China	p. 41
Lost in definitions and translations	p. 44
Makerspaces, hackerspaces and Fab Labs	p.44
Chuangke	p.50
Mass entrepreneurship, mass innovation	p.52
Maker communities	p. 53
Community – an ideal	p. 53
Communication	p.55
Open nights, workshops and individual spaces’ events	p.63
Liminal third and fourth places of making in China – a proposed typology of spaces	p.64
Hobbyist / co-working	p.68
Educational	p.83
Entrepreneurial	p.97
Other types	p.108
Conclusion	p. 111

Chapter 3 Fieldwork & Research	p.112
Being part of a community: methodology and fieldwork	p.113
Methodology and tools	p.113
Multidisciplinarity	p.117
Organization of fieldwork	p.119
Research path	p.120
Experimenting with methodology and workshops – an expansion	p.130
People of reference – building a network	p.136
Selves in transition / liminality	p.139
Maker identities	p.139
People in transition – making people	p.140
Conclusion	p.144

Chapter 4 Historicities, chuangeke and narratives	p.146
Maker Culture	p. 147
Global maker cultures	p.147
Maker Movement in China – a timeline	p.150
The revolution of the makers, global	p.152
From the Arts & Crafts to the Fab Labs: Historicity, resistance and myth	p.153
Resistance to mass production or integration?	p.154
Myth or revolution? Dynamics and illusions	p.157
Chuangke – making with Chinese characteristics, the history of yesterday	p. 158
System and context	p.158
13 th 5-year plans – a framework	p.159
Institutionalization / co-optation	p.161
Making vs Innovating	p.165
China’s initiatives, news and policies	p.166
Shanzhai	p. 174
The narrative twist	p.175
China’s Van Gogh	p.178
Exclusivity, Elitism, Solutionism	p. 180
Accessibility	p.180
Elitism or solutionism?	p.182
The Chinese recipe?	p.189
People, Projects & Objects	p. 190
Experimenting: from ideas to realizations	p.190
Community and space as experimentation	p.193
Conclusion	p. 193

Chapter 5 Cities in / of transformation	p. 196
Urban fabric in China – a framework	p.197
Creative China	p.197
Urban imaginaries	p.198
Urban development and planning in China	p.205
Urban planning in China – a system	p.205
Clusters and super regions	p.208
Parks, clusters for creativity, innovation and culture	p.211
Cities, experiences & identities	p.217
Shanghai: the creative international city	p.219
Shenzhen: the new Silicon Valley and the makers	p.224
Beijing: the historic and political capital	p.229
Cities and contrasts	p.232
Maker events – faire, carnival and international reunions	p. 239
Spaces of the in-between	p. 247
Liminality of places	p.247
Connectivity, mobility, fluidity - cities	p.250
Conclusion	p. 252

Chapter 6 Outreach & impact	p. 254
China-Africa – a context	p. 255
China towards Africa	p.255
Belt and Road Initiative	p.257
Designed in Ethiopia	p.258
China-Ethiopia	p.259
Chinese and Ethiopian makers - connections	p.259
How Shenzhen is fueling Ethiopia’s burgeoning startup scene	p.268
Kabakoo	p. 270
Conclusion	p. 272

Chapter 7 Conclusion	p.274
Makerspaces in the Chinese urban fabric	p. 275
Limits and opportunities of research	p. 277
Bibliography	p. 282
List of Images	p. 304
Figures	p. 304
Maps	p. 308
Pictures by author	p. 309
Annexes	p. 312
Interview Fishbones	p. 312
Reference List of innovation policies in China (swissnex)	p. 317
Curriculum Vitae	p. 333
Science China Newsletter	p.335
ASEM Article – EPFL Magazine	p.336

“Making creates knowledge, builds environments and transforms lives”.

(Ingold 2013)

Foreword

Working on the maker culture is challenging and fascinating because of its **liminality** – liminal: 1. relating to a transitional or initial stage of a process, 2. occupying a position at, or on both sides of, a boundary or threshold (Oxford Dictionaries 2019), **ephemerality** - ephemeral: lasting for a short time (Oxford Dictionaries 2019), and **marginality** - marginal: 1. relating to or at the edge or margin, 2. minor and not important; not central, 3. very narrow; borderline (Oxford Dictionaries 2019). Looking at this phenomenon in the Chinese urban framework of major cities such as Shanghai, Shenzhen and Beijing¹, which are important to China on national and international levels for their incoming and outgoing dynamics, is captivating. The urban fabric of Chinese cities is especially captivating in its size, diversity, organization, speed of change and openness to experimentation. In China, the maker movement appeared in 2011, with the first spaces in Shanghai, Shenzhen and Beijing focusing on hobbyist projects. The Chinese Central government became interested in the concept as a potential economic panacea, creating new types of work forces in parallel with economic reforms. In 2015, a governmental initiative was launched and makerspaces were flooded with official visitors. With the support of the government, new spaces opened under the name of *chuangke kongjian* 创客空间, many of which have meanwhile disappeared. The wave of makerspaces opening and closing under the governmental initiative created a unique idiosyncrasy, in addition to the previously-existing makerspaces and hybrid spaces where older [*we can't use former here*] and more recent ideologies melt together. The purpose of makerspaces ranges from hobbyist projects and co-working space to a showcase for companies to demonstrate their skills, incubators and more. The understanding and interpretation of the word 'maker', *chuangke* 创客, has also evolved in the process and embraces multiple understandings within China.

The interest of the government for makerspaces has not been renewed since the 2015 initiative, but both the original and hybrid places created during the enthusiasm of 2015 continues to grow, be it through the individual pathways of the members linked or not to the spaces or through the spaces with evolving communities. Makerspaces are rich sites of experimentation with multi-layered networks of actors influencing different places and spaces and the appearance/creation of new practices and projects.

From fieldwork and exchanges with communities of makers in Shanghai, Shenzhen and Beijing to wider networks of people around the world whose aim is to make things, everyone involved is in a position to empower themselves and others, and to build new businesses. The thesis is tied to inter-human exchanges, narratives, urban fabric as a fertile soil and outreach. Ties are not only created in China between individuals, communities and spaces but also beyond borders, uniting people and communities in China with, for example, African countries, and more specifically Ethiopia.

¹ Cities named in order of appearance.

The life of makerspaces and their people reflect complex ties between urban spaces and creative/innovative communities, networks of people, interests, intentions and opportunities.

The creation of hackerspaces, makerspaces, Fab Labs, innovation parks, social innovation labs, and living labs is an indicator of dynamic grassroots movements but also of governmental efforts to promote innovation. The research gravitates around questions such as:

What kind of makerspaces exist in China? What are the policies and limits in the possible state co-optation of these movements? What happens when a fairly marginal movement or culture is taken up by a government? Is the maker movement instigating a revolution in working habits? Are cities enabling, supporting or reducing them? What kind of impact can the Chinese maker movement have in the world? Are makerspaces liminal spaces for individuals, cities, and systems?

Personal, individual transitions, empowerment and new working ideals are part of the maker trend. The collective imaginary of the maker culture with actions on different levels resides in the city, as well as above or in-between. The emergence of these spaces created in the context of the maker culture boom is an insightful urban phenomenon to follow, and is also necessary in order to understand the extension and platformization² of these communities, their narratives, transformations, appearances and disappearances. Platformization is a multidirectional process: "One can imagine alternative connections, assemblages, and futures" (de Kloet et al. 2019: 255). This complexity and flexibility are part of this thesis. In the midst of the dynamism and complexity of Chinese cities, it approaches the question of creativity and innovation through local urban actors and communities. The creation of innovation spaces, hubs, and communities, even when built up by individuals, is also influenced by economic, social, and political contexts. The construction, network, and assemblage of the "Chinese city" and more specifically of Shanghai, Shenzhen, and Beijing is also part of our investigation focus taking into account the diversity of China and the centrality of its government. China is moving towards an innovative power, especially in the realm of digital technologies. Studying makerspaces is a way to rethink the bottom-up and top-down dynamics in urban settings.

This chapter describes the story of the research and briefly introduces the topic. It then contextualizes the urban context before presenting the places of interest and the thesis outline.

² Term used here to describe the transformation of (community) spaces into platforms.

THE STORY

Makerspaces are shared workshops with furniture and tools, often organized and maintained by an active community. They are a place for co-working and the pursuit of hobbies. In the context of the Chinese urban fabric and the speed of change, maintaining a stable and sustainable community is challenging. The time and energy put into the community is linked to a specific period in a member's life and evolves with new projects. The financial stability of a makerspace is also often uncertain, unless it can count on support from a governmental entity or a company. Makerspaces thus tend to be ephemeral. In addition, few people know about makerspaces, since the maker movement is a fairly marginal trend. Despite this, however, the maker culture is liminal on the level of people, urban spaces and systems, and has a great impact potential.

Makerspaces are difficult to grasp. Discourse concerning the movement is strong but the impact is not always visible.

Studying and writing about makerspaces is a way to create the history of yesterday and keep a trace of a moment in time. They offer a place for liminality, whose impact on personal lives and systems can be long lasting, even if the makerspace has in the meantime disappeared or changed. Few have succeeded but those that have become models for others.

In 2015, the Chinese government made an effort to recognize and promote makerspaces with the aim to create space for "creators"³ and boost the national economy in an era with a strong ideology for creative class _ creative industries, clusters and economy (Keane 2011, 2013, 2016a). Despite the non-renewal of this initiative, the signal for supporting start-ups and new economies had been given.

Makerspaces are liminal, ephemeral and marginal. In China, they are enabled by the cities (a fertile soil for short-time experiments) and the industrial ecosystem, with easy access to affordable electronic components for example. In addition, they are inspirational to other places, which are supported through projects or members of makerspaces in China, such as the project *Designed in Ethiopia*.

COMMUNITIES OF INNOVATION IN A DENSE URBAN FABRIC

The study of makerspaces offers lenses through which one can observe the political, economic, urban and social changes experienced in China. While limited in size and scope, the maker movement allows the study of broad social, political and economic transformations taking place in contemporary China through a movement perceived positively on all levels (government, private sector and society). This culture has been travelling in different systems adapting to local settings

³ Term used by Prof. Huang BIN, Associate Professor at the Development Research Center of the State Council in Beijing (DRC), to describe the independent workers in creative and innovative sectors during his presentations at the World Humanities Conference in Liège (2017) and Beijing Tsinghua (2017).

(see Chapter 3). The circulation of knowledge is essential here. The practice of makerspaces, which mostly included hobbyists⁴, are also transformed into new mass innovation and entrepreneurship initiatives following the ideology of producing a new creative class (Florida 2004; Keane 2011). China is at a turning point in its economic development. The government is well aware that innovation and creativity play increasingly key roles and are part of an evolutionary process transiting from a “made in China” to a “created in China” model (Keane 2006: 288).

Liminal transitive dynamics, the co-optation initiative and platform and communities with “leading” or most visible position need to be researched further. As these changes transform the urban fabric, they will support a reflection on the urban assemblage (Blok & Jensen 2005; McFarlane 2011; McFarlane & Anderson 2011), an integrative concept to study realities “made and remade in various contested practice” (Blok & Farias 2016: 51; Renaud et al. 2019: 133). This allows researchers to look at the Chinese megacities chosen here with an exploratory openness to unseen forces, entities and relationships and give a voice to communities of making.

The maker culture in China is urban for its intensity. Because, by default, “making” and hacking is more part everyday rural life and is more a need than a hobby, it is also less glamorous. There is an element of genius however. Looking at what environment a city and its politics can generate to enable communities to gather together with the aim to learn about technologies, and make a change in their lives, we realize that this culture is empowering. These spaces are ephemeral and liminal as they may disappear in the process of their members’ transformations. Being a member of a makerspace can, for example, be linked to a specific project, which will evolve or finish; or to a phase in life; to a geographical place and an opportunity to join.

Another interesting aspect is what happens to such an initiative. For cities, it represents a chance to create a new urban imaginary - a vision of the future - new spaces which are a hybridization of the initial maker spaces – the ones before the initiative took place -, and governmental support – which shaped the culture by default. Researching the maker movement provides the opportunity to understand better how a movement exists and evolves in the Chinese urban fabric. These makerspaces integrate in urban dynamics proper to each city. **Shanghai** was seen the first makerspace in the country to open in 2010-2011 and maintains the initial type of makerspaces focusing on hobbyists, freelancers and education. **Shenzhen** has made itself the city of the makers in its rejuvenating narrative from a purely industrial, very much exporting city. Its unique industrial past created a unique ecosystem where electronics of all kinds and fast-prototyping are cheap and plentiful. **Beijing** has the more institutionalized and the more alternative makerspaces, with, for example, a private art school or a LGBTQ+⁵ community.

⁴ In China and in the world, the initial impetus

⁵ Lesbian, Gay, Bisexual, Transgender, Queer or Questioning and +

The urban fabric of the cities has taken in, welcomed, created and nurtured or at least not rejected the existence of these rather alternative spaces, which have been shaped by it.

Studying an ephemeral space is an opportunity to describe something hard to grasp. People inside this culture in China do not perceive or describe themselves as part of a movement. A certain pragmatism is added to a fast-changing environment and a liminal space which will become part of their history in the next years, months, weeks or days. It is an ephemeral part of the urban fabric, a dynamism which can bring into existence of new types of spaces without having the certainty of surviving as such. They may become lucrative businesses, part of a bigger entity, losing their initial ideology and also being totally marginal - but they trigger dynamism! In addition, networks created by the inhabitants out of these places can be extensive and exist between spaces, cities or countries.

URBAN CHINA – A CONTEXT

Chinese cities are the context of the research on makerspaces, they constitute a dynamic fertile soil for short term experiments. Better understanding the dynamics of urban China will allow us to situate the creative spaces and communities of interest. It also gives clues as to the stakeholders of the maker culture.

According to the World Bank Group database, China's population reached in 1.392.73 billion people in 2018, of which 59.152% are considered as urban population (Worldbank 2018). Over half of China's population lives in cities, which reveals a high complexity of ties, mobility, practices and organization: "China has developed a set of internally consistent and effective practices across every element of the urbanization operating model, including on funding, governance systems, and urban planning norms" (Sankhe et al. 2011: 7).

It is also interesting and important to understand that numbers are limited by their definitions. Chinese cities have been shaped by their policies and also specially by the hukou *hukou* 户口 system (Wang 2005), introduced in the 50s, which is a system of social control limiting the free circulation of individuals between urban and rural areas. This system, which has evolved in the last years has created two societies in the same country deepening inequalities and creating flows of migrant workers. China's rapid urbanization is illustrated by the urban population increasing from 18% in 1978 to 54% in 2014 (Graezer Bideau & Pagani 2019; Zheng 2016). The unofficial urban population works in the cities but is not officially or legally registered there, and has therefore restricted access to hospitals, education, social welfare benefits, as well as property and vehicle ownerships. It is challenging to fully trust numbers as they may follow different definitions and are often used to express a strategic picture. It is nevertheless extremely important to understand the bigger picture.

The hukou system, undergoing reforms, is a social instrument to control access to the cities and therefore control their growth. It is also a tool which has created a constant, mobile and cheap labor force since the 1980s: “In the era of reform, the hukou system has been refashioned to serve the state’s new, export-oriented industrialization imperative – contrary to the previous immobilization strategy, this time the peasantry was set ‘free’ to create an enormous class of extremely cheap and mobile labour” (Chan 2019: 16).

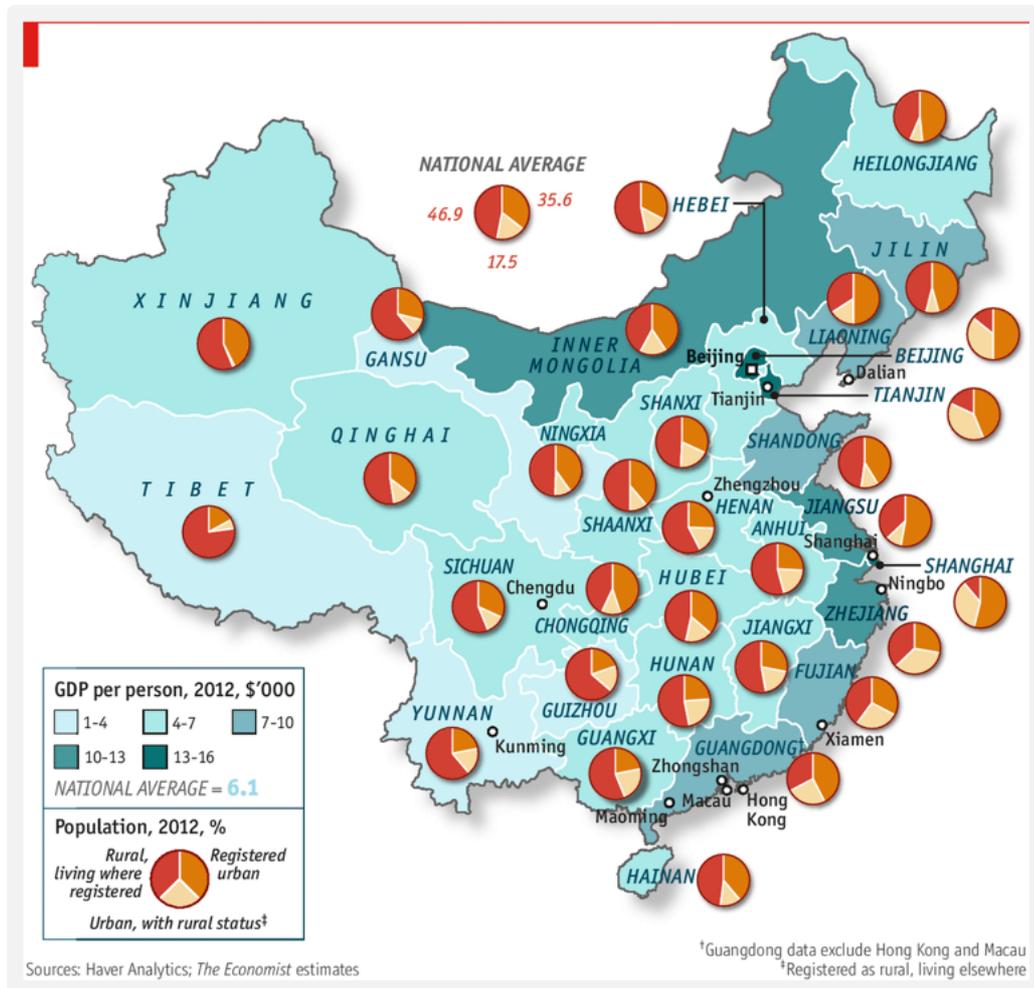


FIGURE 1:

Building the dream – China’s hukou statistics

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The Sohu Business website, a Chinese Internet platform, suggests there are 5 phases of Chinese rural-urban migration (Sohu Business 搜狐财经 2012) as illustrated by Taylor (Taylor 2015: 112), showing the top-down strength and control of the Chinese population:

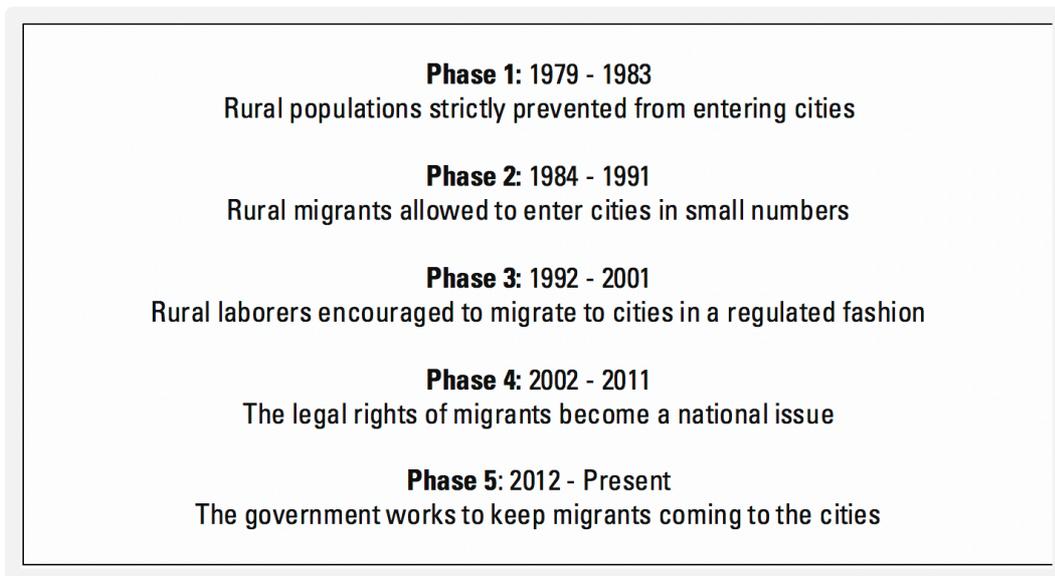


FIGURE 2:

Phases of Chinese rural-urban migration

© author (October 2019)

Rewritten based on Sohu Business/Barreda in Taylor (2015)

The push and pull of governmental initiatives and decisions shows the intention and involvement of the Chinese government in the urbanization and development of cities and citizens over time. Rural laborers, even if Chinese, will not be considered and will not be allowed to become urban citizens due to their hukou. According to the China News Service, the government set the goal in October 2016 “to help 100 million non-native residents, most of whom live in urban areas while registered in their rural birthplace, to gain household registration, or hukou, in cities” by 2020 (Li 2016). Nevertheless, the accessibility to these urban hukou varies according to the city and can be hard to obtain as it is based on a point system based on education level, social insurance payment, age and more (Chan 2018:10). According to Chan, a Hong Kong professor of geography at Washington university, the hukou institution has shaped the people’s identity, supported the economy and kept part of the population below the line, as can be seen on the following graph. With the changes China has undergone and the more recent reforms, he proposes to divide the population with a rural hukou into two groups: peasants and rural migrant laborers (actually working in cities) (Chan 2018: 11).

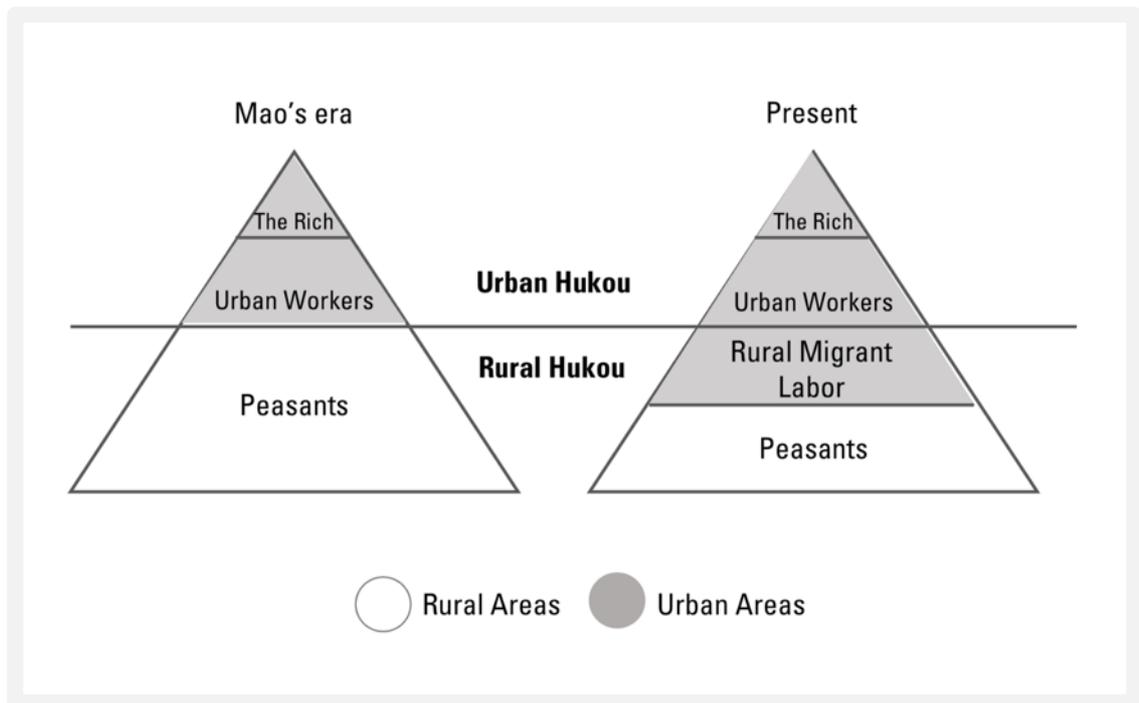


FIGURE 3:

China's social stratification and hukou type
 © author (October 2019)

Redrawn based on Chan (2019)

The rapid urbanization needed both enormous investments in infrastructure and new strategies: "Deepened market reforms and increased globalization have brought about profound structural changes not only to the Chinese economy but also to its urban landscape" (Xie et al. 2007: 2900). Compared to neighboring countries, China's urban areas are overtaking the statistics in terms of urban population (Worldbank 2015).

The new urban landscape, and rapid social, political, economic and urban changes in China is also to be noticed in transitions such as the appearance of free time, recreational activities and other new activities: "Until the late 1970s China was a thoroughly regimented society. The individual had been absorbed into the collective, and private time had all but disappeared [...] And wave after wave of new enthusiasms swept across China, such as qigong fever, tourism fever, keeping-fit fever, and dressmaking fever, as people indulged their new freedom" (Friedmann 2005: 79–80). "Spontaneous" activities such as taijiquan, qigong or yangge dance, emerged after the Cultural Revolution, once the dichotomy between private and public time was officially accepted and legalized (Wang 1995: 26), when people wanted to reconnect with more traditional rituals and take part in activities without supervision from the local government (Graezer 1999: 40). Leisure activities, taking place in urban autonomous spaces, were perceived as small institutions with the ability to challenge official authority (Graezer Bideau 2012; Hou 2010; Farquhar & Zhang

2005) but also show how they can be used for propaganda. The end of the work unit *danwei* 单位 had an important role in the choice of activities and the separation between private and work life (Jankowiak 2013: 194–195).

PLACES OF INTEREST

The focus of this research are the cities of Shanghai, Shenzhen and Beijing and has been conducted in the framework of the project supported by the Swiss National Science Foundation (SNSF): “Makerspaces: communities and politics of innovation in China” between 2016 and 2019.

Shanghai, Shenzhen and Beijing are drivers of the Chinese economy on different levels. Beijing, the capital, Shanghai, the economic center and Shenzhen, the industrial heart of the country, are now not only competitors but also have additional cities in competition with the development of infrastructure. Each of these cities have different historical, social and economic features and different innovation strategies and discourses too (Kamal-Chaoui et al. 2009: 54). My main focus of research was Shanghai and Shenzhen, with an intensive participative observation period in Shanghai and shorter stays in Shenzhen and Beijing.

In Shanghai, the study aims to narrate the emergence of collaborative work through shared making, hacking and working spaces. According to the narrative of the makerspaces in China, Shanghai opened the first hackerspace/makerspace in 2010-2011 and is known for its international community and history. The starting point of my research in China was, therefore, XinCheJian in Shanghai. XinFab, Mushroom Cloud, Coderbunker and Innomaker+ in Shanghai, as well as Shenzhen Open Innovation Lab (SZOIL) in Shenzhen, are directly connected with XinCheJian through their founders. Lindtner, assistant professor at University of Michigan who published several papers on makerspaces in China, and Li, co-founder of XinCheJian and SZOIL, underline that Shanghai, with XinCheJian, is the starting point for the maker community in China, with Shenzhen and Beijing following the dynamic with own maker events.

The establishment of XinCheJian in **Shanghai** marked the beginning of a nascent community in China committed to both the technological and ideological processes of free and open source software. [...] Their members share ideas across several mailing lists, collaborate on projects, and attend or organize international technology and arts events. For example, in April of this year [2012], they organized the first Mini Maker Faire in **Shenzhen** and a maker carnival in **Beijing** that drew participants from China and abroad (Lindtner & Li 2012: 19).

Shenzhen, is the “paradise of makers” and the “world capital of hardware innovation” as declared by Shirley Feng, Secretary General and Executive Vice-President of the Shenzhen Industrial Design Profession Association (SIDA) as well as co-founder of Shenzhen Open Innovation Lab (SZOIL), during the official ceremony of Fab 12 in August 2016. The 12th annual Fab Foundation conference was held in Shenzhen from 8 to 14 August 2016 bringing together mixed participants from around the world. The introductory description of the 2016 conference is the following:

Each year members of the more than 1,000 worldwide Fab Labs gather to share, collaborate, explore and, of course, fabricate. In August 2016 we meet in Shenzhen, China a historically important city for manufacturing and making. Today China is embarking on a long-term program to foster innovation and technology, so the city is a perfect incubator for the digital fabrication revolution Fab Labs are bringing to the world (Fab Foundation 2016a).

The city, known for its industrial capacity and export, is also at the heart of the slogan, “From copying to making”. Oriented towards electronics, the makerspaces of Shenzhen profit from an international aura. It is the place where makerspaces put down roots into the ecosystem and co-create a global imaginary on the city. SZOIL and x.factory are famous maker platforms and have important roles in events they host, tours they organize and for their welcoming function to international makers. Shenzhen also borders Hong Kong and, despite their differences, the two cities’ urban dynamics nevertheless influence each other.

In Beijing, the political capital of China with its historical city and the political center, is prone to greater urban control and to more alternative types of creative industries:

In terms of the contents of artistic production, there is a more rebellious and anti-government spirit in the art communities in Beijing [...] (Ren & Sun 2012: 517).

Rather alternative types of makerspaces linked to art communities were part of the research, namely Q-space, a feminist hacker art place, and atelier Fab Lab Beijing integrated to a private art school. Over the years, the maker carnival, an independent event, previously organized by the Beijing makerspace at 798, an art-gallery and co-working area, has become an official maker faire, affiliated with the international Maker Faire brand⁶ from the United States of America (USA) taking place at the China Millennium Monument (Maker Faire Beijing 2017) and is supported by the government. In Beijing, these marginal makerspaces are unique, but also detached from the co-optation dynamics, which are observed.

My thesis is part of a research project “Makerspaces in China: politics and communities of innovation” supported by the Swiss National Science Foundation (SNSF) lead by Florence Graezer Bideau, with Marc Laperrouza and Clément Renaud (2016-2019). It investigates the social, technical and commercial attributes of key Chinese makerspaces and their communities in Chinese cities (Beijing, Shanghai, Shenzhen and Chengdu) aiming at showing how a bottom-up and autonomous movement responds to State co-optation and to discuss the Chinese government’s plasticity and capacity to engage with emerging classes. To develop my own thesis, I took some distance from the main project to develop a more urban and global view, with people at its heart.

⁶ Maker Faire: “a family-friendly celebration, showcasing innovative projects and the creative minds behind them since 2006” (<https://MakerFaire.com>) is part of the Make community and the Makezine projects.



MAP 1. Selection of places of interest in China (Beijing, Shanghai and Shenzhen) – phone screenshot of maps.baidu.com with added legend © author (June 2019)

THESIS PLAN AND HYPOTHESES

The thesis is written under the umbrella of liminality, ephemerality and marginality concepts which accompany the thesis process, and are discussed in the conclusion. In order to gain and discuss my object of research, and due to its complexity and the variety of fields mobilized for it, I developed four thematic groups: 1. The translation and typology of makerspaces in China, 2. The historicity and Chinese characteristics of the maker movement, 3. The maker identities in the urban fabric, and 4. The global impact of Chinese makers. For each of these four inter-connected thematic groups, I developed specific questions requesting specific literature. Therefore, the structure of my thesis is not based on a general state-of-the-art referring to a global framework, but to four inter-related dimensions that allowed me to have a deeper reading and analysis of my object of research. Furthermore, to realize this unique process, I developed a specific methodology closer to the nature of the object derived from Social Anthropology, and based on intensive fieldworks.

The thesis is divided into seven chapters. Chapters 1 and 7 introduce and conclude the work, while Chapter 2 focuses on the makerspaces of the research, Chapter 3 on the methodological approach and research path, Chapter 4 on the makerspaces with Chinese characteristics with a global historical contextualization, Chapter 5 on the cities and their enabling function, and Chapter 6 on the outreach and influence of Chinese makerspaces with examples from Ethiopia and Mali. I present the outline of the thesis below with the hypotheses corresponding to the four groups and therefore to four of the Chapters.

Chapter 1 is an introduction to the communities of innovation, and the Chinese urban context. I then present the places of interest of this research, the hypotheses, and briefly explain the outline and a reading code.

Chapter 2: To better understand makerspaces in China, I first define and explain the challenge and enriching process of cultural and linguistic translation of global English concepts. I then propose a typology of makerspaces – 1. Hobbyist / Co-working 2. Educational 3. Entrepreneurial / Platform – in China illustrated by the spaces with pictures, schematic summaries, and maps. It discusses the first group of hypotheses, listed below, allowing to situate and better encircle the maker culture in China:

- a. The translation and co-optation of the maker culture in China created only two types of makerspaces: bottom-up hobbyist and top-down entrepreneurial.
- b. The representation of makerspace development in China as a boom is erroneous.

Chapter 3 focuses on the fieldwork and research path illustrated by pictures and schemas. It also discusses multidisciplinary in research and the identity of makers through their testimonies, presents the list of reference persons, and the experimental workshops organized together with the FNS research team at EPFL.

Chapter 4 explains the global maker culture and enroots it into a historical perspective, exploring the connections to the Arts & Crafts movement and the Frankfurt Schule. After global and historical perspectives, we plunge into the Chinese *chuangke*, the context of Chinese political planification, the consequences of co-optation, and the Chinese initiatives and policies. We then look at *Shanzhai*, one of the concepts at the heart of the narrative twist from “made in China” to “created in China”. Before coming back to the people, projects, and objects, we will discuss the accessibility of makerspaces, the potential of instrumentalization and of closed openness. This chapter’s discussion is based on the second set of hypotheses:

- a. The rise of makerspaces in Chinese cities is an intricate dynamic between the global grassroots maker culture in China and the Chinese top-down maker initiative.
- b. The maker movement is creating new ways of working in China. The Chinese government instrumentalized the maker movement in order to boost the economy.
- c. A new elite emerged from the co-optation of the makerspaces in China.

In **Chapter 5**, we look at the Chinese urban fabric, dream and planning system, and the third set of hypotheses. Planned Innovation and creative clusters can influence but do not limit the geography of makerspaces. Nourished by fieldwork, we then describe Shenzhen, Shanghai, and Beijing with their maker identities, and international or local image. Maker events, which are part of the dynamic of the Chinese cities, are presented along with the effect of co-optation. The last sub-chapter on cities is dedicated to a discussion on liminality and in-betweenness of spaces on spatial and urban levels. The group of hypotheses are:

- a. Each city develops local strategies and interprets top-down initiatives. Unique urban identities emerge as a result.
- b. Makerspaces are part of planned creative clusters belonging to the Chinese urban fabric.

Chapter 6 aims at opening up the discussion and showing how the makerspaces in China support international projects, here in Ethiopia and Mali, through partnerships and new types of collaborations. This chapter also shows the ambivalence and complexity of China and African countries ties and cooperation, and answers to the fourth set of hypotheses:

- a. Projects and members’ profiles make the studied spaces international.
- b. The impact of Chinese makerspaces is not limited to China.
- c. The Chinese maker “chuangke” has an imprint on global maker projects linked to local Chinese makerspaces.

Finally, **Chapter 7** is a conclusion to the thesis work. It first synthetizes the research and discusses the hypotheses on makerspaces in China, and shows a reflection on the umbrella concepts of liminality, ephemerality, and marginality. It then presents the limits and opportunities encountered along the way of conducting this research.

EXPLICATIVE NOTE

To understand the stylistic of the thesis, here, a few explanations of the choices made.

Citations directly extracted from interviews are highlighted in *italic and unaligned if longer*. To express the biographical sense and share the feeling of the interview, interview citations are sometimes longer than book, article or website citations, which are in “brackets” or with unaligned if longer.

Images are divided into three types: pictures taken by the author, maps which are based on screenshots on which legends have been added and figures including graphs, screenshots and other visuals.

Chinese concepts and **keywords** appear first in English, then in *pinyin* (official standardized romanization system / phonetic alphabet) in italic, and finally in simplified Chinese characters 汉语拼音 . The first page of each chapter is as well in simplified Chinese and pinyin to honor the language of part of the research.

English has been chosen to make research more accessible.

The **bibliography** is based on cited and used books, academic articles, newspaper articles, Chinese governmental news, websites and blogs.



01. Innovation Zone – x.factory Shenzhen (September 2017) ©author

新车间招新工人

时间:4月11日,下午1点到5点

费用:30元/人

自己动手做,动手改是在现代速食包装,广告驱动的大众消费文化下激发出来的新运动,这个运动的主旨在于自己动手做可以分享的开源硬件。这次的活动是让在上海自己动手做有兴趣的朋友分享正在进行的项目,提出有趣的项目寻找合作伙伴,了解在自己动手做方面有那些工具。这次活动我们已经请到朋友分享电子艺术,服装制作,都市农田,还有开源的硬件开发。会议采取开发讨论的方式,有兴趣的朋友随时可以上台谈自己的项目。

New Maker Wanted at Shanghai Maker

Date: April 11, 1:00-5:00 PM.

Cost: 30RMB/person

Make is a new movement against the shrink-wrapped advertising driven consumption. We are taking back the ownership of our own stuffs. The event is to call for everyone in Shanghai who are interesting in getting their hands dirty and make stuffs. So far, we already have presentations on eArt, fashion, urban farming and open source hardware development. The event will be in un-conference style. Everyone is free to go on stage and present their own projects.

中国城市结构中的创客空间

Zhongguo chengshi jiegou zhong de chuang ke kongjian

Nowadays, makerspaces are imprinted in the urban fabric. The makerspaces are as important as the context where they exist, change, appear, and disappear. The cities and their politics of like Shanghai, Shenzhen, and Beijing, shape innovation and creative communities by providing space, permitting existence, or even offering support. The global maker movement and the Chinese urban fabric converge in the ephemeral nature of makerspaces, maker imaginaries, and maker ideologies that we will discover in this chapter. This thesis is about representations and perceptions, imaginaries and the possibilities of constructing own paths, and also the outreach of a fairly marginal movement long designated as booming. But is the representation of makerspace development in China as a boom erroneous?

Observing makers allows for reflecting upon the broader environment including the attempt to define a global movement which also found a home in China, the lightning-quick state initiative supporting the *maker-chuangke* entrepreneurs, and the Chinese urban imaginary ushering this culture. Through linguistic and cultural translations, and reflections on maker practices, makerspaces in China bring an additional dimension to the maker culture. The translation and co-optation of the maker culture in China created two types of makerspaces: bottom-up hobbyist and top-down entrepreneurial. Therefore, are makerspaces in China limited to this typology?

The maker movement is not as fashionable as a few years ago yet, the seeds planted have yielded their fruits. They are intriguing as they shed light on the new practices in China and the impact, they have through projects like *Designed in Ethiopia*.

This chapter will give an introduction to the makerspaces in China, define the relevant terms, and discuss the notion of community. The places of interest will then be presented through a typology of proposed categories.

MAKERSPACES IN CHINA

The global maker movement, linked to the concept of doing things yourself (DIY) (Day 2016; Gibb 2015; Huang 2017), has experienced an explosive success with the growing access to the Internet, and therefore facilitating the knowledge exchange, personal fabrication, and access to tools. This narrative connects hobbyists and entrepreneurs enthusiastic of manual work. In China, the first makerspaces appeared in the years 2010-2011 with XinCheJian in Shanghai, Chaihuo in Shenzhen, and Beijing makerspace in Beijing. The spread of the maker culture in China climaxed in 2015-2016 with thousands of spaces in the country (GBTimes Bringing China Closer 2017).

According to 2018 article in Sixth Tone⁷ by Xue Yujie: "Made in China, the boom and bust of makerspaces", makerspaces' original maker culture is about democratizing manufacturing. Xia from Mushroom Cloud explains in it that "the government's initiative has, on the long run, reduced the number of makers as it has transformed the idea of maker into entrepreneur" (Xue 2018). Tencent's⁸ data shows that the number of makerspaces grows steadily starting in 2014 to around 6'000 that had been expected in 2018. The research driven by the British Council reveals around 100 active makerspaces in 2016 (Kingsley & Saunders 2016). The discrepancy between these two studies unveils a glimpse of tensions surrounding makerspaces, the imaginaries built and the definitions used for statistics. The numbers proposed by Tencent and visualized by Sixth Tone shows that makerspaces emerged between 2014 and 2015, contradictory to the fieldwork data in the scope of this thesis.

The discrepancy in numbers is potentially explained by a difference in definition of what a makerspace *chuangke kongjian* 创客空间 is. The early makers are fond of manual work, tinkering and sometimes entrepreneurial. The makers emerging after the Chinese government initiative in 2015 are mostly entrepreneurs. As Xia mentions in Xue's article, "the original maker culture is about democratizing manufacturing, referring to how commercialization has taken away people's ability to make things on their own" (Xue 2018). But this discrepancy does not limit the typology existing in the Chinese maker culture as presented later.

In addition, the Chinese Ministry of Science and Technology stipulates that China had 3255 incubators and 4298 makerspaces in 2016 which then resulted in the creation of 233'000 small-and medium-sized enterprises (GBTimes Bringing China Closer 2017). The dichotomies between the three references are not research-limiting, providing an opportunity to showcase discrepancies of the maker culture narratives. The definition of the makerspace does vary in every

⁷ Sixth Tone is a team of writers, researchers and editors from China and the world belonging to Shanghai United Media Group. With a philosophical approach to their work, they describe it in the following way: "There are five tones in Mandarin Chinese. When it comes to coverage of China, Sixth Tone believes there is room for other voices that go beyond buzzwords and headlines to tell the uncommon stories of common people". They divide their reports into 5 tones: rising tones, half tones, deep tones, broad tones and vivid tones depending on the topic, the authors and the content (sixthtone.com 2019).

⁸ Tencent Holdings Limited *tengxu konggu youxian gongsi* 腾讯控股有限公司 is a successful Chinese multinational famous for its internet-related service, artificial intelligence and technology who launched among others WeChat *weixin* 微信, the most used social media app in China in 2011.

statistic: is it the number of autonomous communities prone to experimentation (hobbyists / freelancers), the professional quasi-incubators, number of companies with a makerspace in their offices? The statistic below shows the number of early makerspaces in 2014 and 2015 before the definition was reinterpreted into a more professional and entrepreneurial tool. The 2016, 2017, and 2018 (expected) numbers are possibly integrating the hobbyist and professional types of makerspaces.

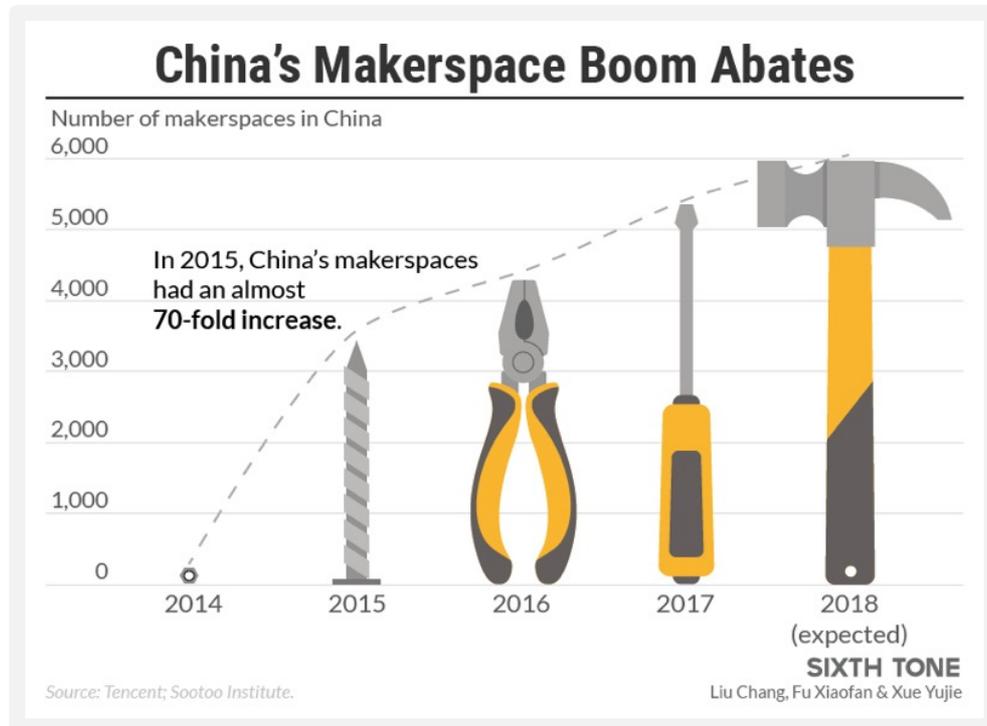


FIGURE 4:

China's Makerspace Boom Abates

© Sixth Tone (2018)

Reproduced with the kind permission of Sixth Tone China

The movement is dynamic, it appears associating itself with ideas of personal development, and fabrication facing mass production. At the same time, this movement is erratic as it disappears with its creators when their lifepaths evolve. A makerspace can be founded by a person who then moves away, it can then be taken over, change its location because the rent becomes too expensive, close because the community dissolves itself, transform into a private business to reach a financial sustainability and else. The various outcomes offer an experimentation freedom (see Chapter 3) linked to the people of this culture and to the city which welcomes and enables these spaces.

Making is as a form of re-appropriation of objects and space, and therefore a way to allow communities and their networks to be more autonomous. As Shorthose, a cultural researcher,

writes: "These more everyday kinds of cultural resistance can be seen in the way people use cultural spaces, and in the new ways in which people are developing ownership and authorship of their own DIY culture, as an actively-produced aspect of their lives rather than as a series of passively-consumed cultural events" (Shorthose 2004: 4). According to Elwood, a geography professor at the University of Washington, USA, small communities are not the most powerful but have the broadest understanding of reality and the capacity "to manipulate in strategic ways": "The complicated urban political roles and spatial narrative strategies that community organizations are producing provide an example of new forms of spatial and political practice cultivated in response to shifting urban governance practices and new bureaucratic and institutional forms" (Elwood 2006: 338). The Chinese makerspaces are hence part and parcel of political shifts and geared to self-development. Spaces of making are liminal on personal, ideological, and spatial levels. Though regarded critically, China has developed a strong international reputation for rapidity of evolution and new initiatives' integration. It has also the will and the capacity to launch and cease experimental initiatives based on their success. Successful examples include Alipay *zhifubao* 支付宝⁹ (an Alibaba *alibaba* 阿里巴巴 initiative), and WeChat *weixin* 微信¹⁰ (a Tencent *tengxun* 腾讯 initiative). Startups and projects are supported and tested by their mother companies, in this case Alibaba and Tencent. Should they fail, the funding stops and the employees have to adapt to the rapid changes and new projects due to pragmatic economic decisions demanding flexibility and openness (Interview Emma, Manager at Swiss Center Shanghai, June 2019). The services adapt, innovate, and change lives.

They are the part of an ecosystem comprising all sizes of companies that are testing business ideas such as mobike *mo bai dan che* 摩拜单车. It is a bicycle sharing system founded in 2015 in Beijing, now spread in the entire country and internationally expanded in 2017. In this context, makers are filling the gap by being neither pure consumers, nor mass producers or business women and men. Makers perceive themselves as performers and producers, and therefore not as consumers of finished goods. They are, here, part of urban spaces of innovation, entrepreneurship, individuality, community and self-empowerment in a context of political change where the individual is now less important than the collective and where the narratives of urban imaginaries co-exist. The tension between the individual and collective projects adds up to the tension between the idea of consumption as empowerment and as uncontrolled force. Indeed, it can be a factor of alienation to the mass-produced objects, and - triggering a resistance by becoming fairly autonomous and independent, and also be acknowledged as an empowering tool improving life quality (Miller 1995). Makerspaces are playing on these dualities. Not only is a maker fulfilling individual projects as part of a the collective ideal of making and self-empowerment, but also producing autonomously in order to master its individual product and distribute it, thus to participate to the cycle, share and possibly benefit from a large market consumption.

⁹ Alipay is a Chinese mobile and online payment platform established in 2004 by Alibaba (see intl.alipay.com).

¹⁰ WeChat is the main communication service in China with mobile text, voice messaging but also with banking, shopping and money transfer options, taxi and food ordering and much more (first released in 2011) (see tencent.com).

LOST IN DEFINITIONS AND TRANSLATIONS

Defining the concept of makerspaces is an enriching process as it entails diverse ideologies, places, and spaces. A mix of concepts in Mandarin Chinese and in English are used in China. This sub-chapter introduces the key terms to understand makerspaces in China with definitions, translations, and discussions.

Makerspaces, hackerspaces, and Fab Labs

Globally, makerspaces, hackerspaces, and Fab Labs, which are the three main terms used to define the community spaces or platforms of interest here have similar definitions and roles. They are all part of the maker culture. Their definitions vary according to the community they serve and their purpose. While the terms “maker-” and “hackerspaces” can be freely used, “Fab Lab” is a trade-marked concept with four criteria to be fulfilled: public access, support and subscription to the charter, commonality of tools and processes, and participation in the Fab Lab network.

According to Oxford dictionaries, hackerspaces and makerspaces are the same or very similar: a makerspace is “a place in which people with shared interests, especially in computing or technology, can gather to work on projects while sharing ideas, equipment, and knowledge”, while a hackerspace is “a place in which people with an interest in computing or technology can gather to work on projects while sharing ideas, equipment, and knowledge”(Oxford Dictionaries 2019). A webpage Hackerspaces.org listing locations, defines hackerspaces as “community-operated physical places, where people share their interest in tinkering with technology, meet and work on their projects, and learn from each other.” (Hackerspaces.org 2008) According to their webpage¹¹, out of 2330 listed hackerspaces, 1416 are active and 357 planned. The screenshot of the world map shows 500 spaces that recently edited their profiles, while the list of spaces in China shows 23 as active, only 9 have functioning links (marked with **x** on the screenshot – see next page). Five are in Shenzhen, two in Shanghai, one in Beijing, and one in Zhengzhou. The number of spaces on the website can be an indicator of the region dynamic. It also reflects the motivation to share their existence with larger global communities.

The communities or the places can register by themselves – the lists are self-managed and open to everyone. The map or lists are therefore not representing the real number or locations of the makerspaces, as not all spaces register. They have possibly moved or closed since registered. The profile is rarely erased after the place closes. Even if the pace of changes in China is not acknowledged on the website, the numbers indicate a dynamic interest in the idea of gathering to hack things, share ideas and knowledge.

¹¹ As of 1 July 2019.



Active:

- [Zhengzhou Maker Space](#) (City [Zhengzhou](#), State [Henan](#), Website <http://www.zmaker.cn/>, Residencies maybe)
- [SteamHead](#) (City [Shenzhen](#), State [Guangdong](#), Website <http://www.SteamHeadSZ.com>, Residencies yes)
- ✘ [5Stones](#) (City [Changchun](#), State [Jilin](#), Website <http://5cshi.com>)
- ✘ [LabZero](#) (City [Shenzhen](#), State [GuangDong](#), Website <https://lab0x0.com/>, Residencies yes)
- [Chaihuo](#) (City [Shenzhen](#), State [Guangdong](#), Website <http://www.Chaihuo.org>)
- [Chaihuo x.factory](#) (City [Shenzhen](#), State [Shenzhen](#), Website <https://www.xfactory.io/>, Residencies yes)
- ✘ [Largo City Hackerspace](#) (City [Beijing](#), State [Beijing](#), Residencies yes)
- [SZDIY](#) (City [Shenzhen](#), State [GuangDong](#), Website <http://szdiy.org>)
- [Qspace](#) (City [Beijing](#), State [Beijing](#), Residencies yes)
- [Trouble Maker](#) (City [Shenzhen](#), State [Guangdong](#), Website <http://www.troublemaker.site>, Residencies yes)
- [Coderbunker](#) (City [Shanghai](#), State [Shanghai](#), Website <http://coderbunker.com>)
- ✘ [Tsinghua i.Center](#) (City [Beijing](#), Website <http://www.xlzx.tsinghua.edu.cn>, Residencies yes)
- ✘ [Wukong Club](#) (City [Wuhan](#), State [Hubei](#), Website <http://www.wukongclub.com>, Residencies no)
- [Xinchejian](#) (City [Shanghai](#), State [Shanghai](#), Website <http://www.xinchejian.com>)
- ✘ [Dongguanmaker](#) (City [Dongguan](#), State [Guangdong](#), Website http://304.kechuang.org/?page_id=107, Residencies maybe)
- ✘ [SWJTU Makerspace](#) (City [Chengdu](#), State [SiChuan](#), Website <http://maker.swjtu.edu.cn>, Residencies yes)
- ✘ [NanjingMakerSpace](#) (City [Nanjing](#), State [Jiangsu](#), Website <http://do-idea.org>)
- ✘ [iChengdu](#) (City [Chengdu](#), State [SiChuan](#), Website <http://www.ichengdu.org>)
- ✘ [YFF](#) (City [Beijing](#), State [Beijing](#), Website <http://www.yuanfenflow.org/>)
- ✘ [FlamingoEDA Open Space](#) (City [Beijing](#), State [Beijing](#), Website <http://space.flamingoeda.com>)
- ✘ [HackerSpace@GZ](#) (City [Guangzhou](#), State [Guangdong](#), Website <http://www.kevinsmake.com>)
- ✘ [88 Spaces](#) (City [Shanghai](#), Website <http://88spaces.com>)

FIGURE 5:

Hackerspaces in the world & active hackerspaces in China (✘ = link not functional) screenshot and added information ©author (October 2019)

Source: hackerspaces.org

From the hacking to the making of things, we can observe an opening of this culture into several contexts. Some makerspaces now exist as autonomous communities, but also as hands-on creative spaces (e.g. in schools and libraries), as spaces for innovation for employers in companies. Makerspaces.com¹², a webpage with a blog and a shop for makerspaces and STEAM (an educational approach for learning science, technology, engineering, arts, and math) materials e.g. Arduino Starter kit or books with projects and tutorials for individuals or schools. It offers a definition supporting the use of “makerspaces” in this research:

A makerspace is “a collaborative work space inside a school, library or separate public/private facility for making, learning, exploring and sharing that uses high tech to no tech tools. These spaces are open to kids, adults, and entrepreneurs and have a variety of maker equipment including 3D printers, laser cutters, [Computer Numerical Control] cnc machines, soldering irons and even sewing machines. A makerspace however doesn’t need to include all of these machines or even any of them to be considered a makerspace. If you have cardboard, legos and art supplies you’re in business. It’s more of the maker mindset of creating something out of nothing and exploring your own interests that’s at the core of a makerspace. These spaces are also helping to prepare those who need the critical 21st century skills in the fields of science, technology, engineering and math (STEM). They provide hands on learning, help with critical thinking skills and even boost self-confidence. Some of the skills that are learned in a makerspace pertain to electronics, 3d printing, 3D modeling, coding, robotics and even woodworking. Makerspaces are also fostering entrepreneurship and are being utilized as incubators and accelerators for business startups” (Miller 2015).

The French work and employment sociologists, Berrebi-Hoffmann, Bureau and Lallement, who published books in French on the maker culture, introduce four characteristics of a makerspace: 1. An open organization bringing together people with fabrication projects, 2. A physical place where resources are available, 3. A non-for-profit association collectively managed and 4. A place of promotion and application of principles and values coming from the hacker, DIY world (Berrebi-Hoffman et al. 2018: 59–84). Hackerspaces and makerspaces are the same with different background stories. Makerspaces have become popular at a later stage, not having the computer-hacking origin. In the book “Coding Freedom”, Coleman writes the story of computer hacking and its relationship to liberalism. She defines hackers as “computer aficionados driven by an inquisitive passion for tinkering and learning technical systems, and frequently committed to an ethical version of information freedom” (Coleman 2013: 2). It portrays the creative and well-accepted hacker, contrary to the commonly understood dark definition of computer pirates.

¹² The company’s mission as described on Facebook is: “We help school and library makerspaces get started and be successful. A makerspace is a space for making, collaborating, learning and sharing” and was founded in 2015 in the USA.

“Makerspace” and “hackerspace” are not brands, compared to “Maker Faires”¹³, which are a product of “Make and Make Magazine”¹⁴ and Fab Labs. According to the social network of the international Fab Lab community, Fab Labs.io:

A Fab Lab is a technical prototyping platform for innovation and invention, providing stimulus for local entrepreneurship. A Fab Lab is also a platform for learning and innovation: a place to play, to create, to learn, to mentor, to invent. To be a Fab Lab means connecting to a global community of learners, educators, technologists, researchers, makers and innovators - a knowledge sharing network that spans 30 countries and 24 time zones. Because all Fab Labs share common tools and processes, the program is building a global network, a distributed laboratory for research and invention (Fab Foundation 2016b).

The Fab Lab network that started at the MIT is now a worldwide organization with a foundation based in the USA. The map (figure 6) shows the registered and approved Fab Labs worldwide.

According to the Fab Lab list, China currently hosts 39 Fab Labs¹⁵, yet the list is not accurately updated. Again, the numbers of spaces are not representative but show the interest in the topic. Fab Labs are linked by an online network. There is also a distributed education model called *Fab Academy*. It is run in more than 70 Fab Labs with over 250 students per year worldwide (Fab Academy 2019). With the motto “Learn How to Make (Almost) Anything”, the *global lectures* take place simultaneously in all the Fab Labs weekly from mid-January to mid-June with tasks to accomplish. The Fab Academy diploma-offering classes take place in the Fab Labs.

Fab Labs represent an ideal of education and development democratization. They are also part of a network of fabrication labs with similar values and tools:

At the heart of this idea is the belief that the most sustainable way to bring the deepest results of the digital revolution to developing communities is to enable them to participate in creating their own technological tools for finding solutions to their own problems. Each FAB LAB consists of a collection of tools for design and modeling, prototyping and fabrication, instrumentation and testing and debugging, and documentation for a wide range of applications in formal and informal education, health and environmental monitoring, as well as economic and social development (Mikhak et al. 2002: 1).

¹³ Events such as Maker Faires will be highlighted in Chapter 5. Definitions in this chapter are focusing on the spaces.

¹⁴ Make Magazine is a bimonthly US magazine published by Maker Media focusing on manual projects. Due to financial challenges, the company’s CEO and author of the book “Free to Make: How the Maker Movement is Changing our Schools, our Jobs, and our Minds” (2016), Dale Dougherty, announced its closure in June 2019. Nevertheless, he is still trying to keep MAKE alive in order to keep the online archive running and allowing the Maker Faire License to continue existing (Constine 2019).

¹⁵ As of 2 July 2019. The numbers can fluctuate as new Fab Labs may appear on the list. From 15 February to 2 July 2019, three Fab Labs have been added to the list. Nevertheless, the Labs states are rarely updated (including if they moved or closed), therefore the numbers are not fully representative.



FIGURE 6:

Fab Labs in the world & Maps of certified Fab Labs in China
 screenshot ©author (June 2019)

Source: FabLabs.io/labs/map

Groups of makers worldwide become Fab Labs in order to be part of the network and connect the dots in another way. The concept of Fab Lab is trade-marked and therefore, even if translated, also used in its English form despite a Chinese text such as for example on the news shared by Fab Lab 0 Shanghai on its WeChat account.



FIGURE 7:

Fab Lab 0 posts on WeChat on 5 June and 17 May 2019 screenshots ©author (June 2019)

Source: WeChat posts on phone

Chuangke

The definitions of *chuangke* are fairly blurred. In this sub-chapter, I will first present the definitions given by the people and their etymologies, then Baidu's online definition, an extract from a Chinese blog, and finally a definition from a Chinese academic paper. They show different aspects of the same concept and also the existing challenges situating this research.

The reality of the fieldwork has shown the difficulty to work on occidental concepts adapted and reinterpreted in China. While presenting at a conference in Belgium, which I attended thanks to Prof. Michael Keane, whom I was visiting for a brief scholarship in Australia, I met a young professor from Beijing who later invited me to attend a presentation for a delegation of southeast Asian journalists in the Chinese capital. Knowing that I was working on chuangke, or 'makers' (he had presented on the same panel as me and therefore had also listened to my presentation), he afterwards invited me to a meeting with two entrepreneurs from the creative industry business (TV etc.). I then realized clearer the misunderstanding of translating the word "maker" (and its connotations in the European/American ideology of the maker), into "chuangke", with its entrepreneurial meaning in Mandarin Chinese. The meeting was friendly but we were talking at crossed purposes by thinking "chuangke" and "maker" were similar concepts. In the car, the Chinese professor, smiled and told me we were like two happy idiots, not fully understanding each other but still content to talk.... I think this was a perfect description of the situation¹⁶.

In Mandarin Chinese, the places defined in English by "hacker-" and "makerspaces" are called *chuangke kongjian* 创客空间. In the translation of the concept, the phonetic translation of "hacker" *heike* 黑客, literally "black passenger" (Renaud et al. 2017) adds to the connotation of the hacker – "pirate" in English. Therefore, the rather positive term *chuangke* 创客, maker or entrepreneur, is used in *chuangke kongjian* 创客空间, "makerspace". *Chuangke* is composed of two characters *chuang* 创 (start doing something or achieve) and *ke* 客 (guest, visitor or traveler), the first is also used in *chuangxin* 创新, (innovation, to innovate) including the character *xin* 新 (new, fresh). These positive connotations are purposeful as they are "employed in positive terms in political and public discourse as a way to foster social change and technological innovation" (Lindtner et al. 2014: 5). Close to the ideology of Fab Labs, the *chuangke* ideology is blurred. Fab Labs have an institutional framework and are defined with a chart and a toolbox. Makerspaces are not institutionalized, have no clear framework and have various forms. Nevertheless, both share similar ideologies of empowerment through learning and doing, social change, and development.

Not only are spaces feeding definitions, the definitions are also translated into ideologies of spaces that have been spreading worldwide. Even though the term is not always translated and used in mandarin Chinese, *chuangke* 创客 is essential in the shaping of the Chinese maker culture. The following definition is given by baike.baidu.com, a popular Chinese research engine.

¹⁶ Field anecdote.

As I asked several Chinese informants how to find a suitable definition for the research project, they all suggested me to use this webpage.

“创客”特指具有创新理念、自主创业的人。

“Chuangke” refers specifically to entrepreneurs or self-employed people who have innovative ideas and start their own businesses (author’s translation).

Not only baike.baidu.com gives the opportunity to look for definitions, the broader Internet also shares numerous ones. An unknown Chinese blogger, appearing under the name of Aster on Douban *douban* 豆瓣¹⁷, defines *chuangke* 创客 as follows:

创客 (Maker, 又译为“自造者”) 概念来源于英文 Maker 和 Hacker 两词的综合释义, 它是指一群酷爱科技、热衷实践的人群, 他们以分享技术、交流思想为乐, 旨在将头脑中的想法变成现实。创客人就是这样一个交流创客文化以及各种 idea 的社区, 希望通过结合不同的创客能量, 激发每个人的创造力! (Aster 2016).

Maker (also translated as “self-made”) is a concept combining the meaning of “Maker” and “Hacker”. It refers to a group of people who are enthusiastic about technology and practices. They enjoy sharing know-how and exchanging opinions on technology, and are motivated to turn ideas into reality! (author’s translation).

This definition corresponds to the global definition of maker without the Chinese specificity of entrepreneurship. It therefore adheres to the early makerspaces philosophy and shows that Chinese makers have different ideas of the movement itself. Wen Wen, researcher at Shenzhen University, defines the makerspace as a messenger and embodiment of the maker culture.

创客空间是“创客文化”发展的重要载体。它为创客活动提供物理空间和硬件平台;同时, 在线上虚拟社区的技术共享及讨论也大大拓展了创客空间的物理边界 (Wen 2015)。

Makerspaces are important carriers for the development of the “maker culture”. They provide physical space and hardware platforms for maker activities. At the same time, online communities, which share and discuss technology, have expanded and surpassed the physical boundary of makerspaces (author’s translation).

¹⁷Douban.com is a Chinese social networking service in function since 2005.

We have now discussed the terms of makerspace, hackerspace, *chuangke* and Fab Lab, now we will attempt to translate the word *chuangke* back into English. By translating, we enrich the vocabulary. A maker is not only a *chuangkeren* 创客人 – 人 meaning person – but also an entrepreneur and a creator! Huang Bin, Associate Professor at the Development Research Center of the State Council in Beijing (DRC), a comprehensive policy research and consulting institution under the State Council, uses the word “creator” in his presentations, which includes the mention of entrepreneur, creative actor and maker. A creator is here a professional creative maker. Aiming for new dynamics in its economy, China has opened up to the idea of a developing creative class engaging in work whose function is to “create meaningful new forms”(Florida 2002: 5–6) (see Chapter 5).

Mass entrepreneurship, mass innovation

The character *chuang* is also used in *shuangchuang* 双创 shortening for the slogan “*dazhong chuangye, wanzhong chuangxin*” “大众创业,万众创新” meaning “Mass Entrepreneurship, Mass Innovation” (Economic Information Daily - 经济参考网 2015), which has been introduced with the public policies of the Made in China 2025 plan. It means double *chuang* and reunites the concepts of entrepreneurship *chuangye* 创业 and innovation *chuangxin* 创新 (Renaud et al. 2017). *Shuangchuang* is an instrument to spread entrepreneurship and opposes itself to the concept of makerspace *chuangke kongjian*, in which the empowered individual would be placed at the center. *Shuangchuang* has brought a certain evolution to the concept of *chuangke kongjian* – formerly a more hobbyist or freelancer “corner”, the word now also encompasses company’s innovation centers, international prototyping platforms, incubators, accelerators, space with machines. It has altered the original definition of makerspaces and given an additional one more focused on commercial success.

Translating words also means reshaping concepts, realities, and understanding. It allows to willingly or not incorporate additional meanings and interpretations and also remove the inconvenient or the culturally unseemly or understandable ones. The translation and change of meaning reflect a certain pragmatism. The maker culture in China was inspired to create a new meaning adapted to its ecosystem and needs. Hobbyism is a rather new concept in the Chinese concept (more to it in chapter four). Makerspaces, makers and their communities are therefore at the interface of hobbyism and entrepreneurship with a serious interest in education and DIY. The marginality of the culture and its economic insecurity is a challenge for communities’ engagement in terms of spending time together. At the same time, it is an opportunity to try new things, as the stakes are rather low.

MAKER COMMUNITIES

Community – an ideal

A community is a rather positive understanding of a gathering of people or groups of people sharing interests, space or ideals as Rapport writes in the Social Anthropology Encyclopedia:

Whether “community” represents a togetherness of the past (Tönnies), contemporary behavioural commonality (Frankenberg, Minar and Greer, Warner), political solidarity (ethnic, local, religious), or an utopian future (a rural idyll, a world order), here, notwithstanding, is a concept of always positive evaluation and evocation, whose usage expresses and elicits a social group and a social environment to which people would expect advocate or wish to belong (Barnard & Spencer 2002: 117).

The definition of Rapport underlines the broadness of what a community can mean for its members. In the context of makerspaces, a community is often – but not always - a group of people sharing interests. It is also the result of a conscious effort to create, maintain or grow it. Communities are changing because of who is part of the community. Groups of people leaving at a similar time make you think of a generational change. They started alone, found common projects and support, and leave when the one project they wished to implement is completed or the time is over. The project can serve to figure out what the next step in life will be, to learn more or to prototype a product that can be brought to the market. These projects often evolve once the person has started their maker experience. Failures, new ideas, new interactions or skills will support the decision to stay longer in this community or to continue their own path, be it a new maker-type community or association in another city or focus on another aspect of their life. It is difficult to be active in a community and have a work-life balance. Therefore, the age of the makers in communities ranges from 25 to 35 years old.

To the question: “What is a community?” Amanda, Chinese from Qingdao) explains how much the spatial context can be of importance to the sense of community without limiting it:

Community can be physical, can also be an online community, a group of people that are connected with the same aim or purpose or share the same interest. As long as they share something, they form a community naturally, like learning language. There are English learning groups, makers' groups etc. This whole industrial program... no it's not... this whole area is called knowledge and innovation center. It's also called knowledge and innovation community. The developer of this area / park wanted to be as a community. It is not only offices, offices, offices. They wanted to have the living environment, the commercial street, the office spaces, some entertainment and also space for kids. This whole park is a natural community. You might just stay within this community and you will have everything you need (Interview Amanda, Innomaker+, former XinCheJian, September 2017).

A few elements are striking in the extract: the informant hesitates about the program definition, which shows the connection between the *knowledge and innovation center* and the former types of *industrial program*, therefore also the danwei system; she speaks of a *natural identity*, while this form of community building would be considered as a constructed identity in anthropology,

and she mentions the developers of such parks – linking the private and governmental sectors for a productivity of space and people.

The concept of community in Chinese has and had a physical and geographical meaning. To translate this concept also means to lose part of its socio-linguistic understanding and open doors to additional aspects. Community *shequ* 社区 - composed by *she* 社 which means organized body and *qu* 区: area or administrative district, is defined as: “a compound of the characters for society/association/organization and for differentiate/region/area, or “society in a spatially defined area” (Abramson 2006: 199) (see also (Derleth & Koldyk 2004). The sense of community is therefore more bound to a space than it is in Europe for example.

In English, a community is defined as “1. A group of people living in the same place or having a particular characteristic in common. 2. The condition of sharing or having certain attitudes and interests in common” (Oxford Dictionaries 2019). In French, “communauté” means 1. Etat, caractère de ce qui est commun à plusieurs personnes. 2. Identité dans la manière de penser de plusieurs personnes 3. Ensemble de personnes unies par des liens d’intérêts communs” etc. (Larousse 2019). The first three definitions given by the French dictionary indicate that a community is created by the sharing of lifestyle, identity or interests¹⁸.

Again, languages shape meanings of words adding or losing comprehension and carrying deeper historical usages. Amanda gives a strong input by explaining that a place or a space is part of the creation of a community. Other managers and members of the makerspaces underline on the contrary rather the emotional and personal link between their members. A former member of XinCheJian, American from Vietnamese origin, Kevin, explains that what made the community strong was the friendship between the members. According to him, they were all smart and ambitious, which sometimes led to tensions but at the same time to the strong personal link between them: “With great people, you get great ideas with strong personalities. And several strong personalities interacting can create tensions” (Interview Kevin, former XinCheJian member, entrepreneur, Shanghai, October 2017). Rockets, Chinese maker from Shanghai, explains that one way to build up a community is to provide knowledge, events, and make interesting things. They create teams around topics such as robot and have robot competitions. They also recently created a book reading group meeting on a regular basis (Interview Rockets, former XinCheJian member, co-founder of Mushroom Cloud, Shanghai, September 2017). Leyis, a Chinese maker from Suzhou, explains the three plans to tackle the challenges of having a stable community and more active members:

First, organize more workshops with high quality to attract more people come to our space. Second, increase exposure opportunities of the excellent projects which are created in XinCheJian. Third, improve the management of the whole space, include tools and membership also channel of publicity (Interview Leyis, XinCheJian member, November 2017).

¹⁸ Being French speaking, the researcher is also influenced by this definition and naturally contrasts the Mandarin Chinese version.

But communities can also be places where one is alone in a group (Lallement 2015: 208), the communities of practice are about sharing but very often the sharing part is limited, it is also very much about individual work cohabitation and finding the balance of when to engage other members of the community. Usually the projects are individual or in small groups, but the notion of community is still important. This tension can be illustrated by a short discussion with Ivan, a member of XinCheJian, in November 2017. As I was working on my computer in the common space, he came to me asking if I needed any help on that day. As I did not, he justified his nice gesture explaining that he had been asked by other members of the community to be less self-centered and to participate more in the makerspace by helping others, sharing ideas or organizing events. These tensions are inherent to these places, there is a constant need of adaptation between participants and in activities, between oneself and the others.

Communication

The main communication path for and in makerspaces in China is WeChat. This phone application is essential for communicating between makers, and also to conduct a research in this field, or more generally in China. They sometimes also have their own website and/or a Facebook page, which is more used for the international outreach. WeChat, which can be considered as a whole ecosystem with the many applications, is used in several ways. Official accounts are sub-applications where the followers can read the posts and news by the owner. Everyone can follow the mini-programs on WeChat by searching or scanning the QR-code. Official accounts can also inform about opening hours, tools available, upcoming events.

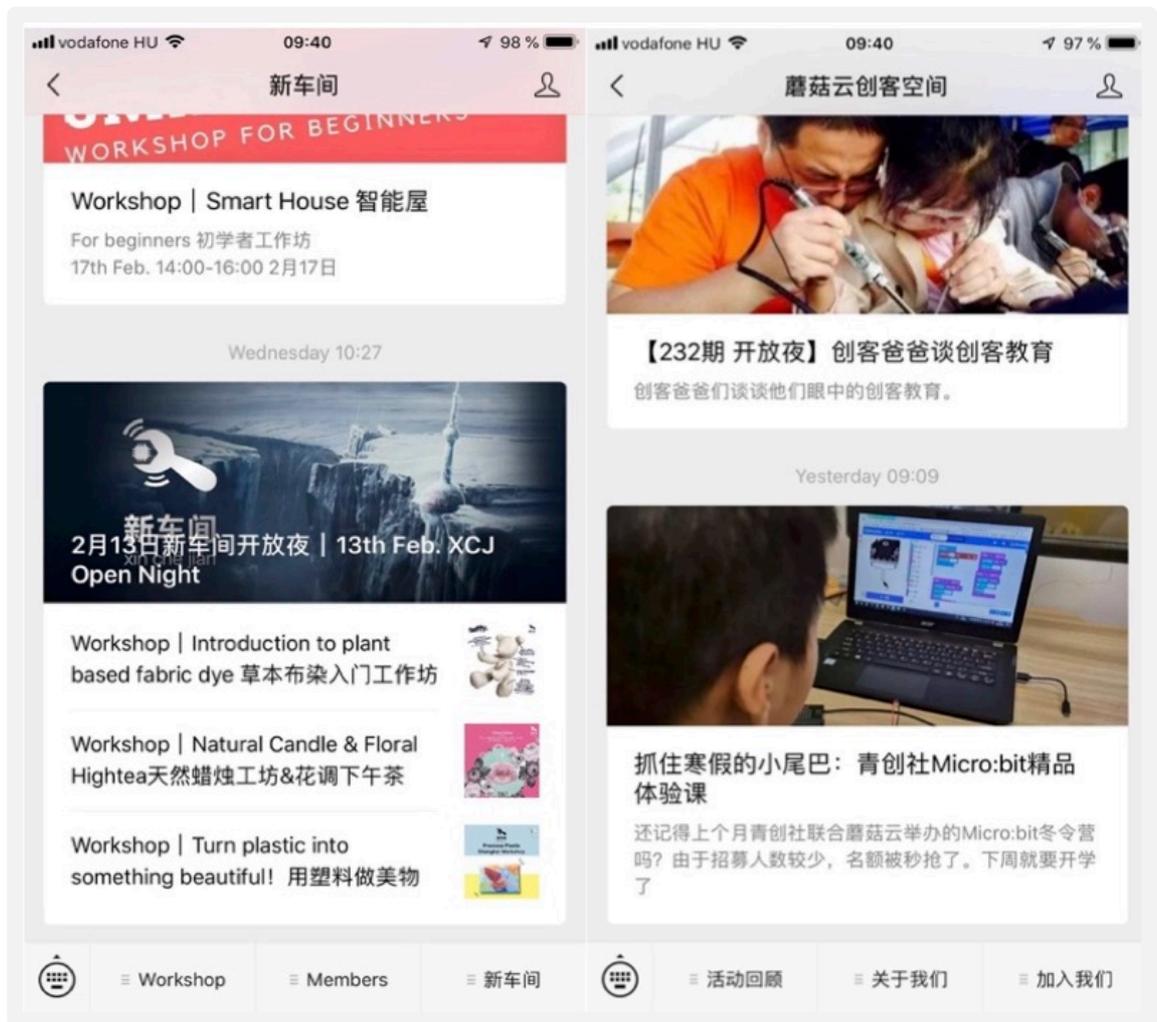


FIGURE 8:

XinCheJian and Mushroom Cloud on WeChat on 13 February 2019
 screenshots ©author (February 2019)

Source: WeChat posts on phone

As China Internet Watch - a blog featuring tech news, digital trends, and innovations in China - explains and shows, the most frequently used channels for China's Online communities are WeChat groups with 47,2% and 11,1% of WeChat Official Accounts. Websites represent only 8,3% of communication opportunities internally in China (China Internet Watch 2016). In the last years, e-mails have almost become obsolete in China. First released in 2011, WeChat has evolved into an all-around platform of communication, e-commerce, mobile payments etc., and is believed to have an "utilization rate of 94.5 % among Chinese netizens" in 2018 (Wang et al. 2019: 244),

which corresponds to more than a billion active users. WeChat has facilitated interpersonal communication but also accessibility to many services, especially to banking.

For members of spaces or active and curious people, there are WeChat groups where any new member needs to be added by someone internal or apply pending the approval from a group member or a group manager. There are groups of members of communities such as XinCheJian, XinFab or Q-space; groups of projects: Tokylabs, Precious Plastics, Domosfarm or Silk screen printing; or wider groups of interest such as “我是创客 I’m a hacker”, CN Maker movement, Shenzhen Studies Group, Tecnologos and more.

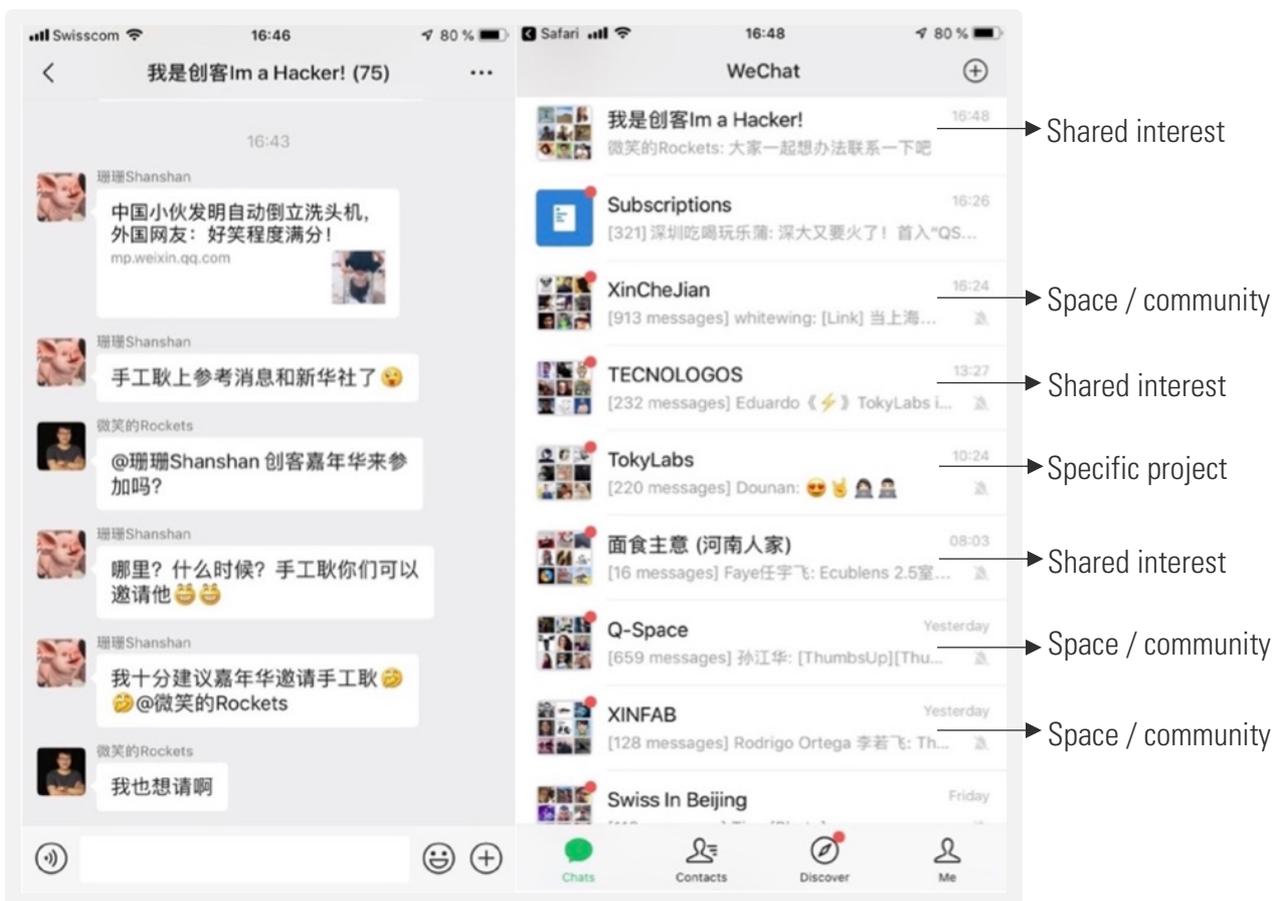


FIGURE 9:

Active groups & example of conversations on WeChat in June 2019 screenshots ©author (June 2019)

Source: WeChat posts on phone

Participating to online communities' chats allows observing the flux of new members joining and old ones leaving (even if rare) and also the flexibility in the groups in terms of topics of discussion that are driven by active members. These screenshots are from the author's own WeChat account, which she joined during the fieldwork in China, mostly during 2017 and 2018. The first step is to have an account and to be daily active, and then it is important to join events to network. Almost immediately, people suggest connecting on WeChat to discuss further, take their smartphones out and are ready either to scan the other's QR code or to share their own. Afterwards, the contact is established. Contacts easily share WeChat details of other people and may add you to the groups of their organization or interest to join the discussion. It resembles a spider net: it helps to be there to make the contact and create a trust link, and then, in the context of makers, people are generously sharing contacts and including new participants into their own net.

The group is partly detached from a spatial context as it is often linked to a physical space at the start but does not require the space anymore once established. The sense of belonging and the daily exchanges of asking questions and sharing information are observed to be maintained on WeChat. Below, two groups of members are shown, the first one with 495 people is Q-space, who made an only English-speaking and only Chinese-speaking group while on the right is the one of XinFab with 199 members with exchanges in English mainly¹⁹. Some makerspaces mix English and Chinese, depending on the active members. Members leaving the city or country tend to remain in the groups maintaining the communication. It is a way to be part of the community from anywhere. The number of members in a WeChat group does not reflect the active member count of the offline community, serving rather to connect them. Usually it is those engaged in the community at some point who will be part of the WeChat group. Group chats are limited to 500 members; hence some spaces have several groups if this number is exceeded. From 100 members, only those who linked a mobile number to their WeChat account can be invited to join the group (WeChat Help Center 2019).

¹⁹ These data has been collected in February 2019. They tend to slightly evolve or decrease when members decide to leave the group or new members join.

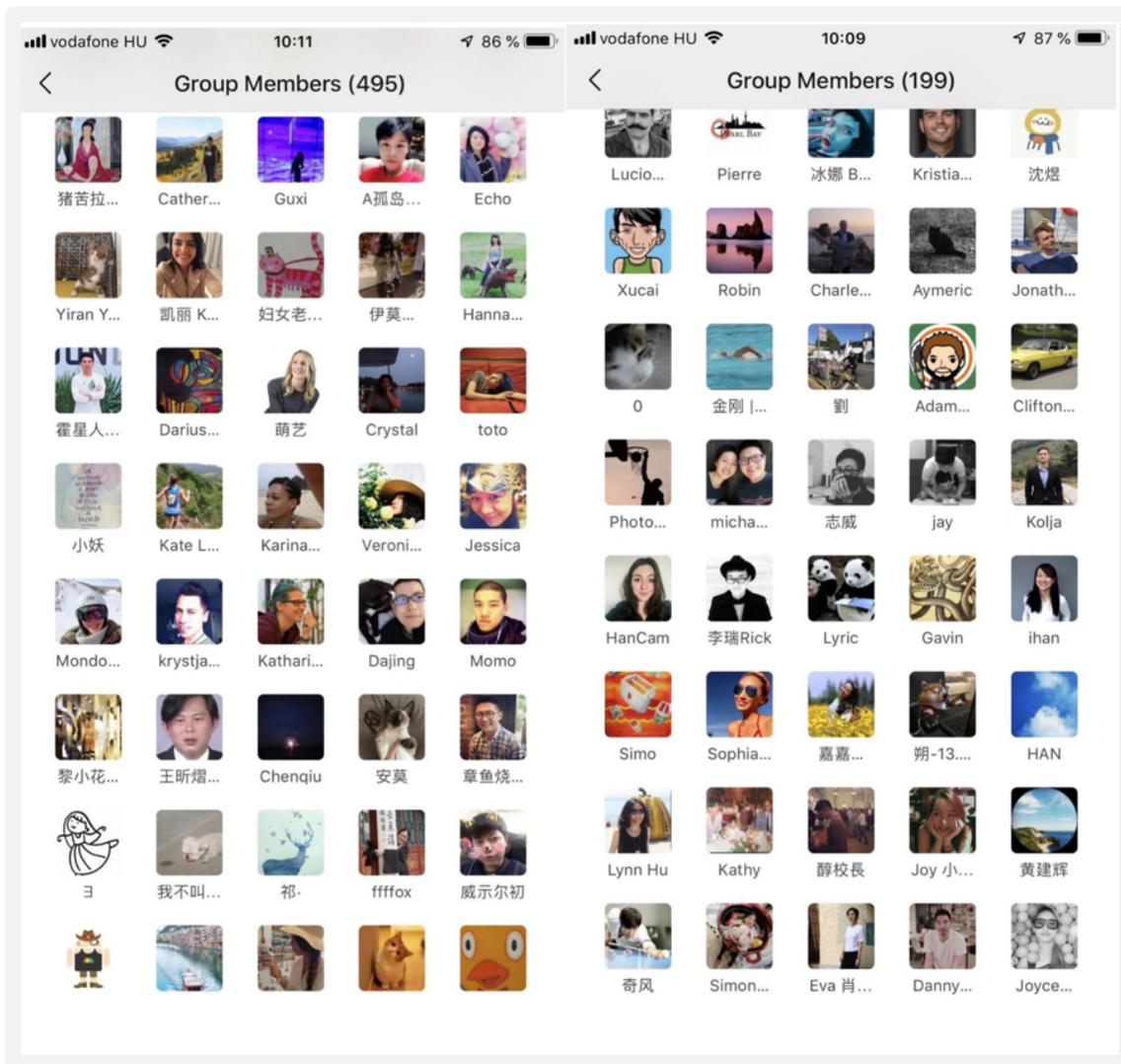


FIGURE 10:

WeChat groups of Q-space and XinFab in February 2019
screenshot ©author (February 2019)

Source: WeChat posts on phone

Several makerspaces have not always updated Facebook and webpages, as they mainly communicate through WeChat. XinCheJian has closed down its webpage, keeping a wiki as a trace as all the information is communicated through WeChat. Chaihuo and x.factory share a Facebook page since 2019 that was initially only Chaihuo's but this page is not very active. Q-space shares updated information mainly through Facebook. Chinese maker communities rarely communicate on Facebook since it is blocked on the main Chinese Internet. Nonetheless, international communities may create a Facebook, bilingual or English-only website. Technology savvy, including makers, use Virtual Private Networks (VPN) or other proxies to access the

websites blocked by the Great Firewall²⁰. For non-Chinese, the first contact and access to makerspaces will be through the general Internet Makerspaces such as Shenzhen Open Innovation Lab (SZOIL), Mushroom Cloud or XinFab have their own webpages. SZOIL's webpage is in English only, which shows the outreach effort, while Mushroom Cloud has a Mandarin Chinese version and an English one. Interestingly, Fab Labs, which are part of the Fab Lab movement mostly have their own webpage, as well as a page on the network's website.

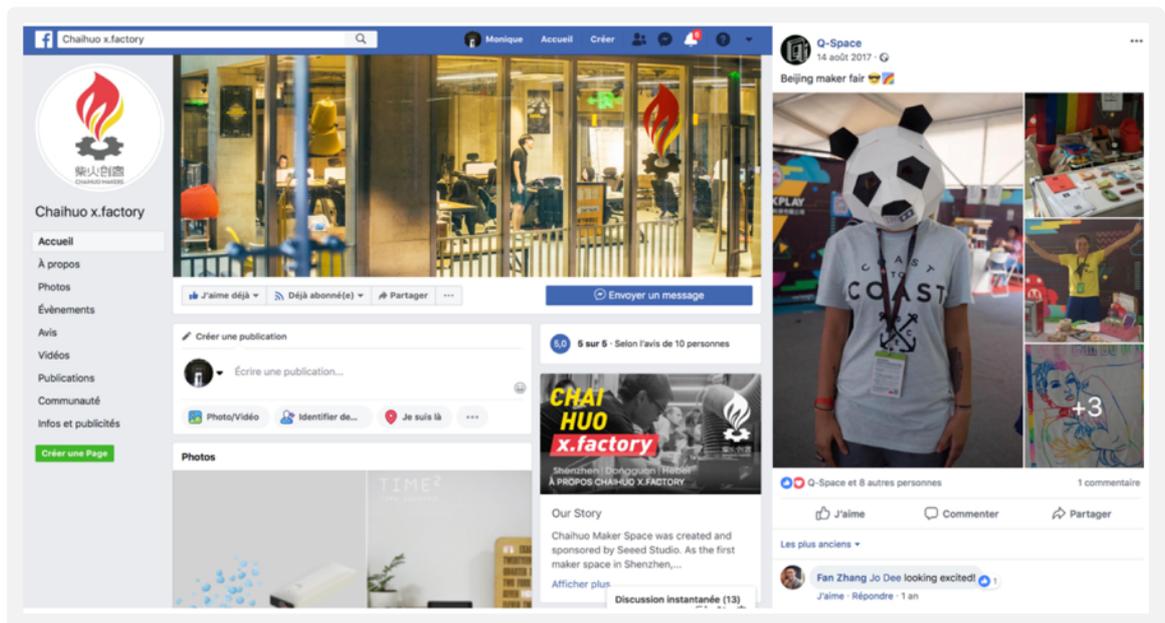


FIGURE 11:

Facebook pages of Chaihuo x.factory in June 2019, and Q-space in August 2017 screenshots ©author (June 2019, August 2017)

Source: Facebook pages on phone

²⁰ The Great Firewall describes “the massive and sophisticated Internet-filtering system used in China, which blocks the populace from viewing online content hosted in other countries that censors deemed to be harmful to the nation” (Jyh-An Lee 2018: 407–408).



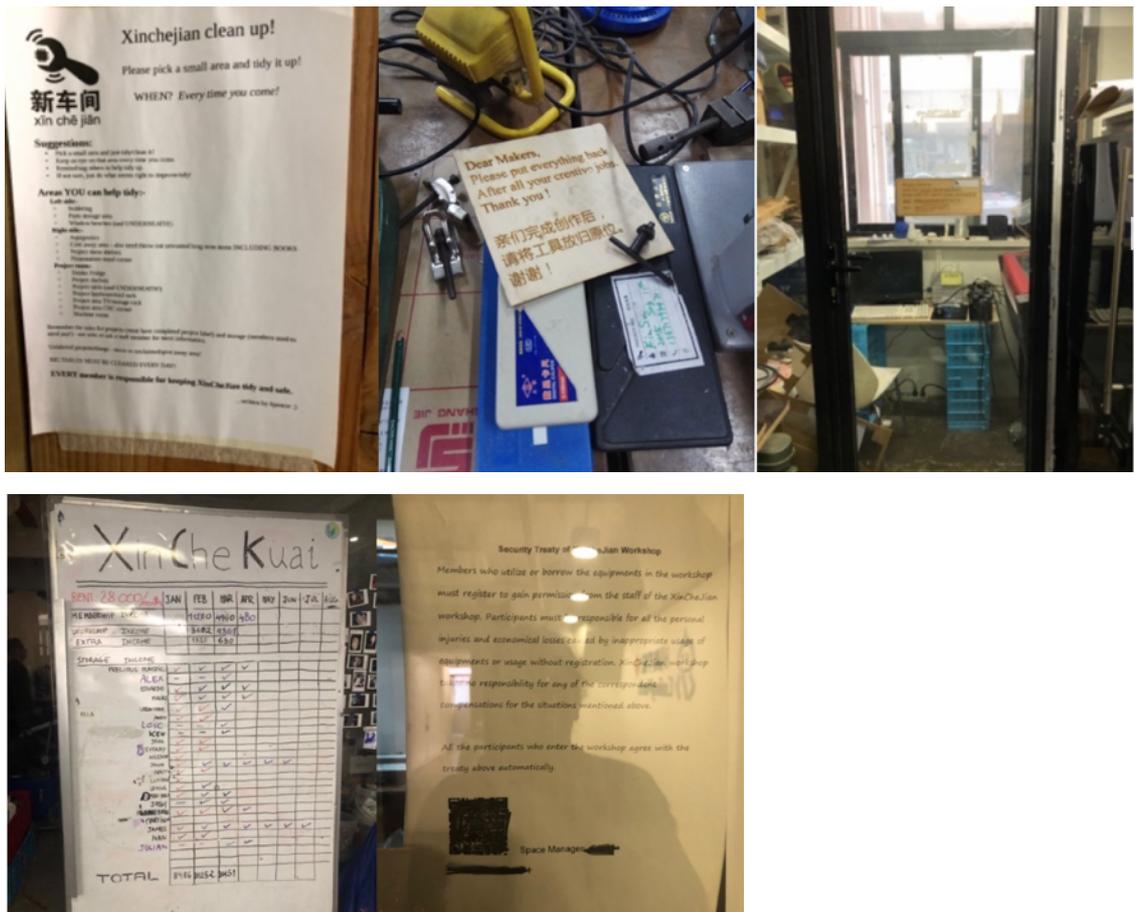
FIGURE 12:

Shenzhen Open Innovation Lab (SZOIL) and Mushroom Cloud websites screenshots ©author (July 2019)

Source: www.szoil.org and www.mushroomcloud.cc

Social media platforms and the Internet allow to keep an online and offline community together, exchange information, ask questions or recommendations to further develop a project. It is also a place where WeChat trolls regularly have to be removed from groups for sharing e.g. advertisement. These means of communication are a continuity of the offline community that starts to exist in a defined space. Even if this physical space will disappear one day, the online community can continue existing through a historical place which created a new space of thinking and exchange. There is therefore a necessity to create a trace, an anchorage, to exist and bring legitimacy to the group.

Daily encounters and regular meetings to organize the space, the community and the events are at the core of the communities. These regular member meetings are accompanied by visual communication trying to enforce cooperation, cleaning, security while developing the projects at the makerspace. As mentioned earlier, someone is often alone in the group which tends to make them focus exclusively on their project. Order and cleanliness are often not a priority in experimental, free of hierarchy, and full of materials spaces. At XinCheJian several types of notes testify to the need of organization while respecting individual freedom when possible. The tension between the individual and the collective adds up to the idea of freedom of tinkering and organization of more traditional workspace.



02. Visual communication at XinCheJian, Shanghai (2017-2019) ©author

Open nights, workshops and individual spaces' events

Open nights, workshops and other events including parties, presentations or visits bring new visitors and potentially new members to discover makerspaces and learn new things. These moments show the opening of the community towards others and the wish for accessibility. They can also be read as the concept of "institution rite", the creation of legitimacy and recognition through events (Bourdieu 1982: 58). These events are opening moments where individuals can join the community and therefore transition from being an outsider to insider. Such events have also evolved over time. Workshops present in many spaces hardly attract enough participants. Open nights once aiming at linking members and new people to pitch ideas, and potentially gain new members have rather become vitrines of what makerspaces are and could be. The members leave before the event starts and just the ones presenting stay. XinCheJian's members are discussing new ways of having open nights. In Shanghai, the main communities coordinated their events. In 2017-2018, XinFab's open night was on Tuesday, XinCheJian on Wednesday, Mushroom Cloud on Thursday at their Pudong location and Mushroom Cloud together with Innomaker+²¹ at Innomaker+ Yangpu location on Friday. As the makers themselves join the events mostly if there is a need of a presenter or support for the event, external people can choose and discover several places to decide where to join.



03. XinCheJian activities in Shanghai: 3D printing workshop (September 2017), party (November 2017), precious plastic workshop (April 2019) © author

²¹ Innomaker+ is an entrepreneurial makerspace.

LIMINAL THIRD AND FOURTH PLACES OF MAKING IN CHINA – A PROPOSED TYPOLOGY OF SPACES

The spaces of interest for this research do not belong to a defined category of type of place, they are at the crossroads of places where you can work, learn, play or develop your own business. Theories about third and fourth places are therefore supporting the discussion and attempts to situate makerspaces, their role and opportunities.

Bhabha, Indian philosopher, Soja, American urbanist and geographer, and Oldenburg, American sociologist, have individually worked on the thirdness of place and opened the discussion. Bhabha defines these in-between spaces as “terrain for elaborating strategies of selfhood – singular or communal – that initiate new signs of identity, and innovative sites of collaboration, and contestation, in the act of defining the idea of society itself” (Bhabha 1994: 14). Soja proposes the third space theory to surpass the understanding of dual spatiality proposing a “trialectics of spatiality” with Firstspace, Secondspace and Thirdspace. For him, it is a way of “Thirthing-as-Othering”, “radically open to additional otherness” (Soja 1996: 61). Constantly in-between, these spaces are considered as different. Oldenburg calls “first place” the place one lives in, and “second place” the place one works at. People spend most of their time in the first and second places. The “third place” is a place for encountering people, relaxing, enjoying oneself (coffees, bars etc.) (Oldenburg 1999). The thirdness of places as proposed by each Bhabha, Soja and Oldenburg open the possibilities for otherness, self-definition, pleasure. These third places are less defined spaces and allow to surpass the duality of defined spaces of professional and personal life activities.

The in-betweenness described by these authors does correspond to the place in which makerspaces evolve but is, at the same time, not sufficient. Makerspaces are not detached from first and second places as shown in figure 13 on the next page. Their concept is blurred and part of the first, second and third places, while at the same time an opportunity for uniqueness. Morisson, researcher on innovation for cities with a PhD in economic geography, goes one step further developing a “Fourth Place” theory considering that “place” is evolving with the knowledge economy.

“In the knowledge economy, the rise of new social environments is blurring the conventional separation between the first place (home), the second place (work), and the third place. New social environments in the knowledge city can combine elements of the first and second place (coliving); of the second and third place (coworking); and of the first and third place (comingling). Furthermore, the combination of elements of the first, second, and third place in new social environments implies the emergence of a new place, the fourth place (Morisson 2018: 2).

I argue that makerspaces belong to this category of fourth place. The not-fully-defined concept of makerspaces reflects the position of its members and users. They are not purely different, they

are parts of all three places, and at the same time allowing a unique place. Makers are at the crossroads of coliving, comingling and coworking in their projects and new lifestyle exploration.

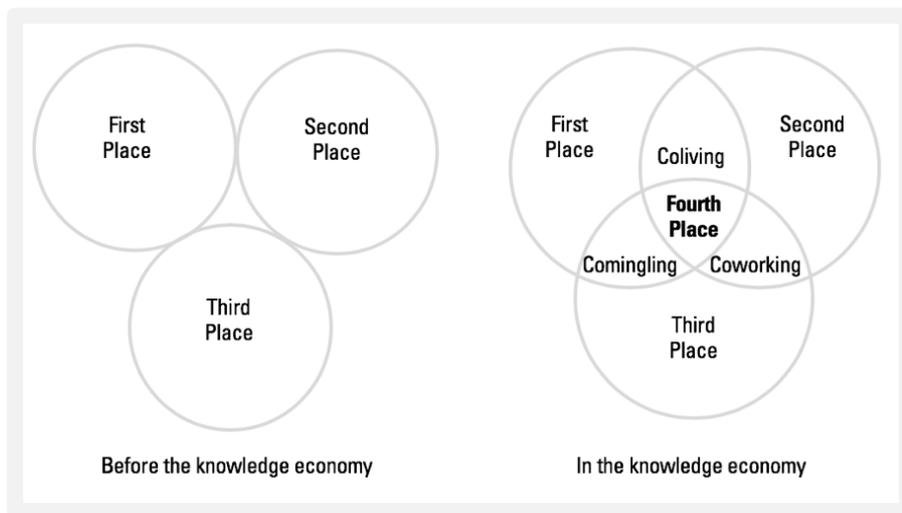


FIGURE 13:

Places before and in the knowledge economy

©author (December 2019)

Redrawn based on Morisson (2018)

Makerspaces are and have evolved into a Fourth Place with the knowledge economy and circulation, the access to Internet, and the search for new places representing alternatives to systems in place. Part of an underground culture, the first makerspaces (see figure 32, p. 149 “the global maker timeline”), were Third Places. The chronological evolution of the global maker culture with among others, the digital changes, has shaped and modified the role and place of makerspaces.

In addition to the tension in the categorization of the spaces, I consider necessary to add the notion of platformization opening places vertically for worldwide accessibility but also fulfilling the Chinese government’s agenda. Lin, assistant professor in cultural industries and platform studies at the University of Groningen, and de Kloet, Professor in Globalization studies at the University of Amsterdam, investigate the emerging Chinese creative class, part of the rapid Chinese cultural production platformization:

“[...] the platformization of cultural production in China accommodates the state’s “entrepreneurial solutionism”, while also producing a digital creative entrepreneurship among Chinese “grassroots individuals” and a dynamic digital culture permeated with contingency and negotiation” (Lin & de Kloet 2019: 2).

Makers represent an alternative to the Chinese cultural production mentioned above, and still fit in the state’s agenda (see Chapter 4, Accessibility). It is therefore an essential step to look at the communities themselves and later at the interactions and entanglements between communities, the urban context, and the politics and policies. Through defining a “makerspace”, we lose part of the freedom that each of the spaces or places described have taken. This awareness helps us consider it a frame for thought and use it for policies and program development. Here, the first step is to consider makerspaces as Fourth Places, and the second step to develop a typology to define what kind of makerspaces are encountered in the field. The process is both inductive and deductive, the author is constantly iterating between the two, it is *transductive*: “maintaining a dialectical relationship between theory and empirical research” (Schmid et al. 2018: 30–31).

These categories are used and created to give a rather schematic understanding of the third/fourth spaces encountered in Shanghai, Shenzhen and Beijing, knowing that the categories are “blurry”, intricate, and permeable in reality. They help defining the intention and status of the makerspaces at the moment of the fieldwork and are: hobbyist/co-working, educational, and entrepreneurial/platforms.

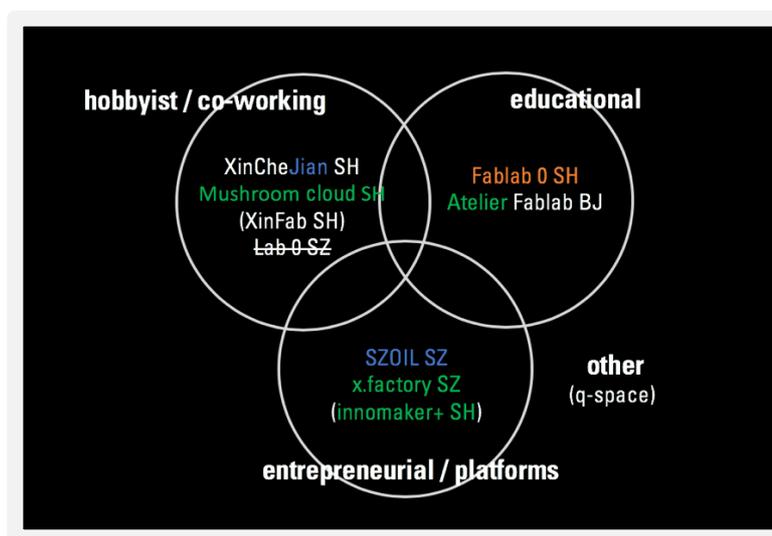


FIGURE 14:

Typology and makerspaces – a proposal by the author:

colors = fundings (green – private, blue – public, orange – university)

symbols = dynamics () = changed / moved / reopened and **barred** = closed

©author (November 2019)

Each space mostly embraces the different aspects but in different ways as will be presented with each makerspace definition in the following pages. Also, here again, in addition to the categorization of types of spaces, there is a chronological evolution of places. The first makerspaces in China were mostly hobbyist / co-working places. The maker culture in China has chronologically evolved towards more educational and entrepreneurial places without replacing the first.



MAPS 2. *Makerspaces of interest in Shanghai, Shenzhen and Beijing - screenshot of maps.baidu.com with added legend © author (October 2019)*

Hobbyist / co-working

The hobbyist / co-working category represents the early makerspaces, such as XinCheJian and XinFab in Shanghai or Lab 0 in Shenzhen. They are hacker and makerspaces whose main activities are to develop projects individually or in teams in a community sharing a workplace with tools and machines. They are chronologically the first type of makerspaces in China.

During workdays, mostly freelancers work in the space, while at night and during the weekend, people with a steady activity (employment or studies) are joining them. Events as open nights, parties, and workshops, bring together diverse members and curious people to share ideas, develop new projects, find new project mates, collect money to run the space, and get the place known. Very often, the members of these groups share similar values or ideals about their community, for example, the importance of supporting each other or the absence of hierarchy. With the governmental initiative, some open nights, such as XinCheJian's, have become a showcase. Makerspaces have attracted the attention of government and media in 2015, and have therefore become a potential model for new innovation hubs. The interest for the emulation of this grassroots initiative has sometimes overwhelmed the spaces with visits of curious people or governmental employees. In Shanghai, the different spaces have coordinated their open nights, which also show their ties and the importance given to building their network. People visiting open nights are usually not members of a makerspace yet, it gives them an opportunity to promptly participate to different events or discussions.

How does it work?

pay a monthly fee or a fee to use the machines, specific events or workshops, Open nights

Who goes?

freelancers, interested persons (passion), tinkers, students, artists

Which spaces are part of the hobbyist / co-working category?

XinCheJian in Shanghai

XinFab in Shanghai

Mushroom Cloud in Shanghai

Lab 0 in Shenzhen

Chaihuo makerspace in Shenzhen

Beijing makerspace in Beijing

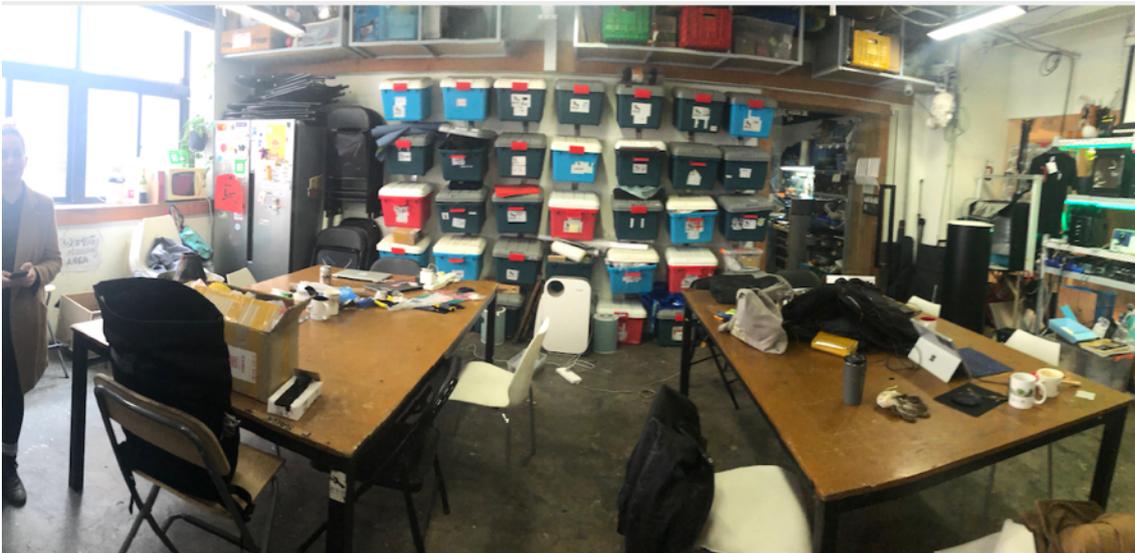
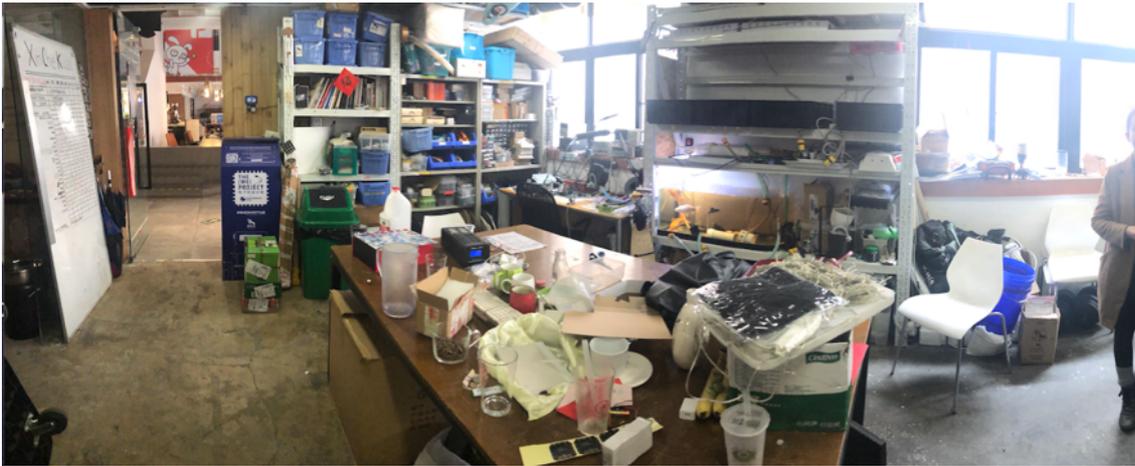
Types of projects

Aquaponics, Tools for plastic recycling for sensitizing the public to pollution, Art, Connected watches, urban gardening, silk screening, camera sliding device

Events

open nights, makerfaires or carnivals, workshops to learn how to use the tools, small conferences, staff meetings (mostly volunteers)

All makerspaces share the challenges of financial sustainability or survival as well as creating and maintaining their community. These challenges can create tensions and priority changes but also opportunities to try new models, deem failures as enriching experiences and sharpen ideas and projects. The table above gives a key to understand which places of interest of this research are part of the mentioned category and what is the general functioning of it.



04. Panoramic picture of XinCheJian, Shanghai (2019) ©author

XinCheJian

XinCheJian is known as the first hackerspace / makerspace in Shanghai (Jing'An district, the heart of the city), and in China. According to the community's wiki and noted by most scholars working on this topic in China (Lindtner 2015; Poon & Klein 2017), the "first Chinese hackerspace with a permanent physical space" was co-founded by David Li, Ricky Nguyen and Min Lin Hsieh and opened to the public in March 2011. The founders met at an event of Xindanwei 新单位. The latter was founded in Shanghai by Liu Yan – entrepreneur, arts management specialist, and community manager who worked in the Netherlands before returning to Shanghai Xu Wenkai – digital artist - and Chen Xu – researcher in creative economy who worked in the United Kingdom (UK). The name of the co-working community promoting creativity and cross-cultural and discipline exchanges is translated as *xin* 新 – new and *danwei* 单位 – working unit. Xindanwei was a space service providing creative event venues, flexible office spaces and retailing locations in Shanghai from 2009 to 2013. In April 2010, the first events appeared on the calendar of Xindanwei and one of them was the "New Maker Wanted at Shanghai Maker":

Date: April 11, 1:00-5:00 PM.

Cost: 30RMB/person

Make is a new movement against the shrink-wrapped advertising driven consumption. We are taking back the ownership of our own stuffs. The event is to call for everyone in Shanghai who are interesting in getting their hands dirty and make stuffs. So far, we already have presentations on eArt, fashion, urban farming and open source hardware development. The event will be in un-conference style. Everyone is free to go on stage and present their own projects. (Xindanwei.com 2010)

This call for new makers underlines the diversity of what a maker can be and what will later constitute the communities around makerspaces in China. Everyone with an interest to do something manually and to communicate about it is welcome.

XinCheJian means *xin* 新 – new and *chejian* 车间 – workshop, and its motto is "What could go wrong?". The motto resonates with the idea of experimentation, fun, and the possibility to fail and learn from it. The pressure of success is replaced by the idea of fun and self-development. The name itself expresses the will to tinker, experiment, and work manually but is not opposed to intellectual work, rather incorporating it through personal and individual experience. Adele, French, one of the members, said she was worried about joining this "group of geeks" (Interview Adele, November 2017) – a geek is defined as an unfashionable or socially inept person. A knowledgeable and obsessive enthusiast, 'a computer geek' (Oxford Dictionaries 2019) – but has never regretted joining and starting new projects with other members. She is, among others, one of the members who came with curiosity, joined a project with a group of other members whom she met at a XinCheJian meetup, with the other member who was motivated to continue the project on the long term it. In the meantime, they created a company called *Precious Plastic Shanghai*. They are still developing the project, have hired a part-time employee, attracted interns, and are continuously evolving with it.

The whole communication occurs over WeChat as explained in a former sub-chapter. Currently²², the XinCheJian group on WeChat includes 330 people. The group is used by its members to ask questions about materials, tips to develop their projects, share updates on what they do, share information about useful events or interesting articles and also event invitations for workshops, evenings, reunions at the makerspace and more.

XinCheJian is a grassroots community with, currently, a financial participation of the local government for its rental expenses.

It has a special position in the maker culture in China, as it is a web of connections, a network or a rhizome as Deleuze and Guattari define ceaselessly established connections. (Deleuze & Guattari 1987: 7). XinCheJian members or founders have established, managed or been part of other newer makerspaces. David and Ricky, the co-founders of XinCheJian, have each founded new entities: Shenzhen Open Innovation Lab (SZOIL) for the first, and Coderbunker in Shanghai, and now also Singapore, for the latter. Another Ricky and Rockets have founded Mushroom Cloud in Shenzhen; Amanda has become the manager of Innomaker+, Lucio has founded XinFab. The places will be presented in more details.

For each makerspace, I prepared a synthetic visit cards with collected information from the field, WeChat and online.

Self-definition (according to the community): hackerspace / *chuangkekongjian* 创客空间

Members: around 50 (fluctuating constantly)

Nationality: mixed, depends on periods

Language of space: English and Mandarin Chinese

Material: tables, chairs, fridge, tools, machines such as laser cutter, 3d printers

Membership fee: 100 CNY / month (2017) – approx. EUR 12.8 / USD 14 (as of 11.10.19)
changed to 200 CNY/ month – approx. EUR 29.6 / USD 28 (as of 11.10.19)

Payment: membership fee, stocking space rental, special workspace rental, sponsorship, event participation or organization

Contact: WeChat: 新车间

Website: https://wiki.XinCheJian.com/wiki/Main_Page / <http://XinCheJian.com> (is not used anymore)

Address:

4. 05.2014-now: People Squared Co-working space, 28 Yuyuan East Road, Jing'An District

3. 05.2012-05.2014: 1035 Changle Road, Jing'an

2. 03.2011- 05.2012: 76, Anhua Road, Changning district

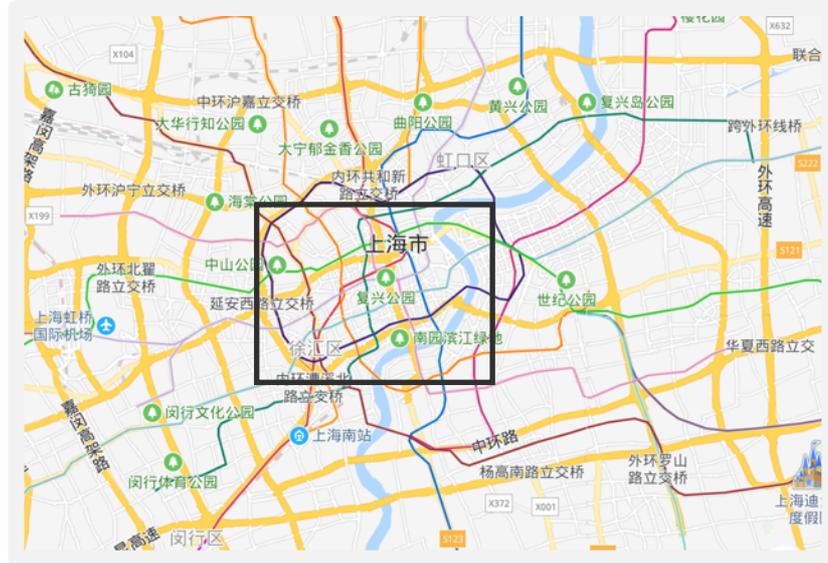
1. 2010/11 events at Xindanwei – Yongjia Road 50, Xuhui district.

Founders David Li (now at SZOIL Shenzhen) (Taiwanese), Ricky Ng-Adam (now at Coderbunker Shanghai/Singapore) (Canadian), Min Lin Hsieh (left) (Taiwanese)

Opened: 2010 and with physical location: 2011

²² As of 15.02.2019

Shanghai 上海



MAPS 3. Shanghai and different locations of XinCheJian in Shanghai from 2011 to 2019 - screenshot of maps.baidu.com with added legend © author (October 2019)



05. XinCheJian, Shanghai (2017-2019) ©author

XinFab

XinFab – *xin* 新 means new and fab stands for fabrication - is a Fab Lab located in Jing'An District, in the center of Shanghai. XinFab defines itself as a non-profit organization (NPO) supporting and encouraging everyone to create things. Lucio, a Brazilian who lived in China for several years and is the founder of XinFab, was a staff member of XinCheJian. He created XinFab in 2014 in a room next to XinCheJian. In contrast to XinCheJian, users had to pay for using tools and machines in order to keep them in good shape. As mentioned on the Fab Lab network website connecting the Massachusetts Institute of Technology (MIT) branded network, "Xin Fab is a FabLab effort grown out of the necessity of the hacker/makers community [...] born in the first hackerspace in China, XinCheJian. Independently run from it but with strong ties to the hackerspace XinFab aims to offer great tools for the current community of hackers/makers with the lowest cost possible to give real access to the public.(Fab Lab Network 2019)".

XinFab is a space that received a lot of attention from local media and support from entrepreneurs (designers or developers) during the boom of makerspaces, at the time of the governmental initiative, but has faced tremendous challenges to remain functional. After announcing the closure in March 2018, they were welcomed in new premises by DoArt describing itself as a multi-functional art space with a soundproof recording studio, which decided to support them. In January 2019, XinFab informed the public of their definitive closure as they lacked financial support and DoArt needed to reduce its space, but in February 2019 a re-opening party was planned in March as they had found a new unexpected supporter: KCLabs. Kids Creativity Labs is an education company organizing workshops for children from fourteen to sixteen years old located at DoArt Space. In October 2019, XinFab announced moving to a nearby location with KCLabs. Being associated to XinFab can help gaining visibility, as it is part of the Fab Lab Network and also potentially provide tools and knowledge to its partners depending on the reached agreements. But the group announced a misunderstanding on 18 November 2019 on their WeChat account and are again looking for a new space (see next page).

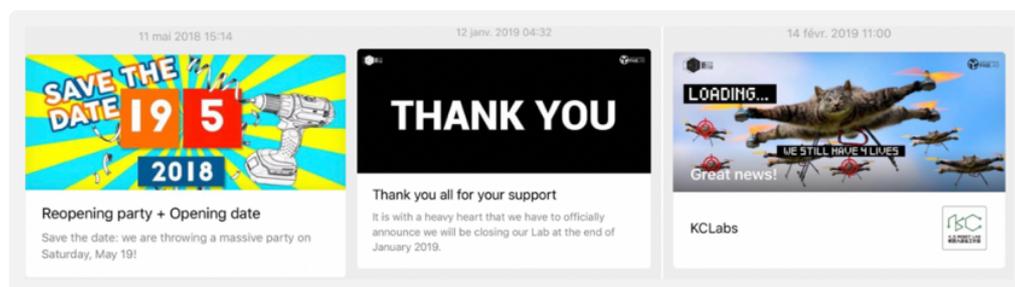


FIGURE 15:

News of XinFab's reopening on 11 May 2018, closing on 12 January 2019, and re-opening on 14 February 2019
screenshots ©author (February 2019)

Source: WeChat posts on phone

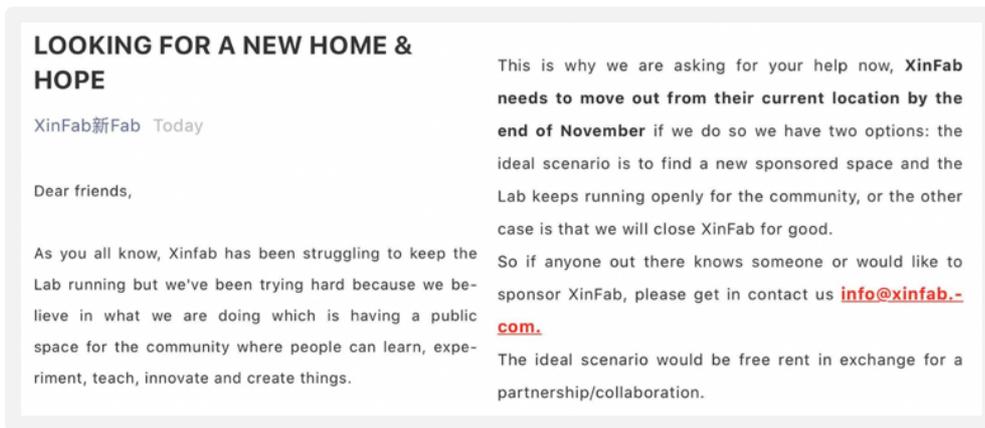


FIGURE 16:

XinFab News on 18 November 2019
 screenshots ©author (November 2019)

Source: WeChat posts on phone

As many other makerspaces, being recognized for long-term investments from people, communities, companies or governments is a challenge. As of February 2019, the XinFab's WeChat group consists of 197 people and the discussions take place in English. Even though XinFab is branded and recognized as a Fab Lab, it struggles to survive for lack of members and funding. The space depends on volunteers. It is a grassroots community.

Self-definition (according to the community): Fab Lab

Members: N/A

Nationality: mixed, more foreigners

Language of space: English

Material: tables, chairs, tools, 3d printers, sewing machine, laser cutter etc.

Membership fee (in 2017): 1-month CNY 180 approx. EUR 23 / USD 14 (as of 11.10.19)

6 months 1080 CNY + 1 free month. approx. EUR 138 / USD 152.4 (as of 11.10.19)

12 months 2160 CNY + 2 free months approx. EUR 276 / USD 304.8 (as of 11.10.19)

Payment: membership fee / renting of machine / participation to events / sponsorship

Contact: WeChat: XinFab

Website: XinFab.com / <https://www.Fab Labs.io/labs/XinFab>

Address:

6. 10.2019-...: Wanhangu Road 605, Jing'An District

5. 02.2019 -10.2019 Wuding West Road 1288, Jing'An District, 3rd floor (KCLabs)

4. 05.2018 -01.2019: Wuding West Road 1288, Jing'An District, 3rd floor (DoArt Space)

3. 08.2017-04. 2018: Kangding East Rd, Lane 45, Building no. 5, Room 102, Jing'An District

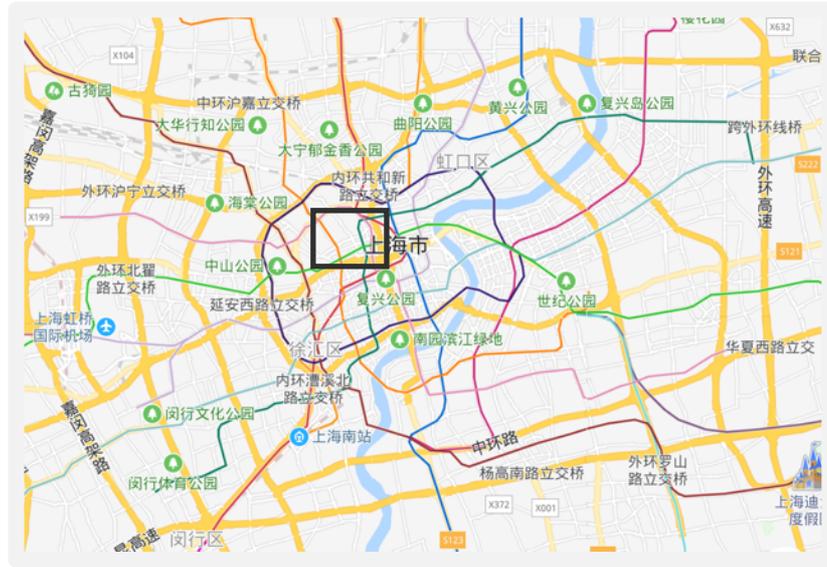
2. 01.2017-07.2017: D.T Space, 665, Changhua Road, Jing'An District

1. 2014 to 2016: People Squared Co-working space, 28 Yuyuan East Road, Jing'An District

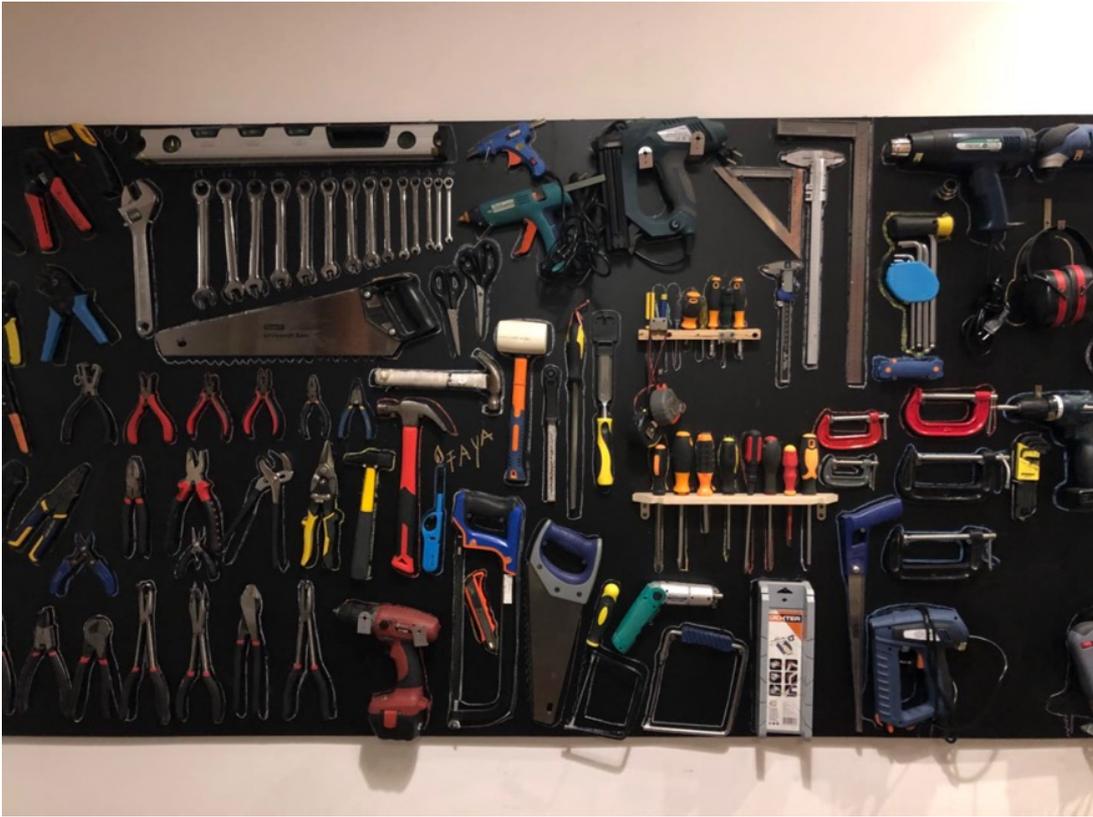
Founders Lucio Pentagna Guimaraes, former XinCheJian member (Brazilian)

Opened: 2014

Shanghai 上海



MAPS 4. Shanghai and different locations of XinFab from 2014 to 2019 – screenshots of maps.baidu.com with added legend © author (October 2019)



06. XinFab, Shanghai (October 2017, March 2018) ©author

Mushroom Cloud

Mushroom Cloud *moguyun chuangke kongjian* 蘑菇云创客空间 is literally translated as “Mushroom Cloud maker space”. It was the first makerspace in the business district of Pudong, in the East of Shanghai. Rockets, the co-founder of the space, receives English-speaking visitors. As he explains, he learned English with the people he met mostly during his involvement in XinCheJian’s makerspace (Interview Rockets, co-founder of Mushroom Cloud and former XinCheJian member, September 2017). He met Ricky Ye, the co-creator of Mushroom Cloud and the person who later hired him at DF Robots²³, at XinCheJian. They were part of the core group who co-paid the first rents with the founders of the latter. Mushroom Cloud was opened in 2013 in Pudong, where there was no other makerspace. Rockets explains that XinCheJian was too far for him and the other members working in Pudong. They couldn’t not go as often as they hoped and it was therefore a great opportunity to open a makerspace closer to their workspace. Puruan Incubator who sponsors the space first gave Mushroom Cloud a small space that later expanded. The place is rather empty during the day, with one or two freelancers, but can be full for events such as open nights, training sessions and workshops or competitions. Mushroom Cloud considers itself as a representative of the nation-class maker spaces and identifies itself with the government initiative even if inspired by a hobbyist makerspace. They define what they do in the following way:

People come to Mushroom Cloud to make their ideas into reality. Someone solely creates things for hobbies. Someone transforms his works because of some previous defects. Yet someone sets up a team forming a start-up based on their incredible accomplished former works. [...] Besides enjoying what we do, we share our happiness. Many of our friends offer DIY workshops and specific courses, sharing their gained knowledge. Many specialists show us how to make robots, 3D printers, CNC, electronic skateboards and laser keyboards and make them with us. (Mushroom Cloud - 蘑菇云创客空间 2018)

Mushroom Cloud is not a governmental makerspace, as it was founded in 2013, but it integrates and profited from the 2015 trend.

The makerspace is also a platform for the products of DF Robots’ company. As Rockets says, “Mushroom Cloud is the offline community of the online DF Robots community” (Interview Rockets, co-founder of Mushroom Cloud and former XinCheJian member, September 2017). It is a place to tinker and discover, with a unique DF Robot products’ distributor. From all the places visited, Mushroom Cloud is the only one directly providing some electronics and products from DF Robot in their space.

²³ DF Robots is a robotics and open source hardware provider with “a large community catering to future creators”.



07. Mushroom Cloud's product distributor (February 2018) © author

Mushroom Cloud is a place that welcomes groups and individuals and also a platform for geeks and clients interested in electronics, robotics, and more. Workshops of all kinds are given to students, professionals or other guests. Here the entanglement between the makerspace and the company is clear. Rockets' passion for 3-D printers and robots cannot be doubted, but is pragmatically linked to the company for which he works. Mushroom Cloud's website also explains the aim to become at some point a new hardware incubator but no further details are shared yet. The main language of the events and trainings is Mandarin Chinese. The companies around the makerspace are Chinese and mainly with Chinese staff – contrary to Jing'An where XinCheJian or XinFab are located and where more foreigners live or work.

Self-definition (according to the community): makerspace 创客空间

Members: approx. 100

Nationality: mostly Chinese

Language of space: Mandarin Chinese

Material: tables, chairs, tools, 3d printers, laser cutters, carpentry workshop etc.

Membership fee: free

Payment: funded by Puruan Incubator (space) and DFRobot (hardware + technical support)

Contact: WeChat: 蘑菇云创客空间

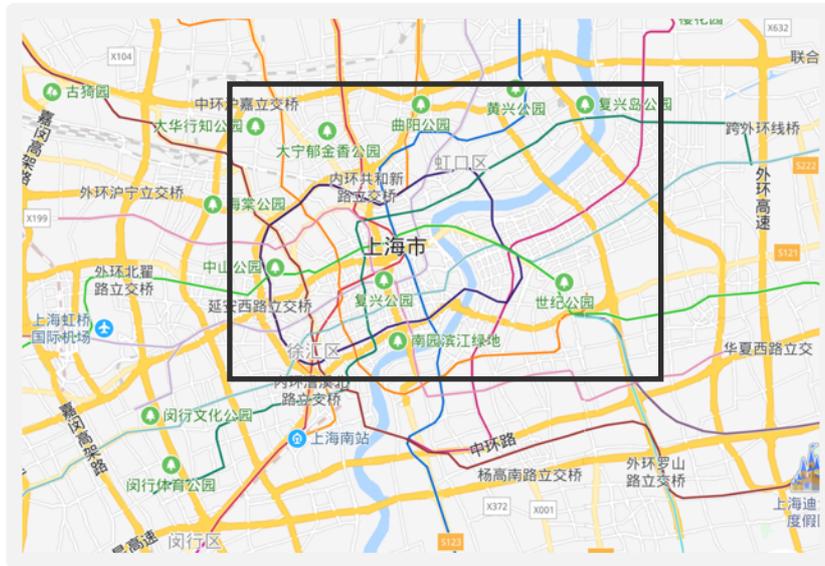
Website: <http://www.mushroomcloud.cc>

Address: (always the same, but the size of the makerspace has increased since the beginning)
B1, I-CUBE Space, Boyun Road No. 111, Pudong New District, Shanghai

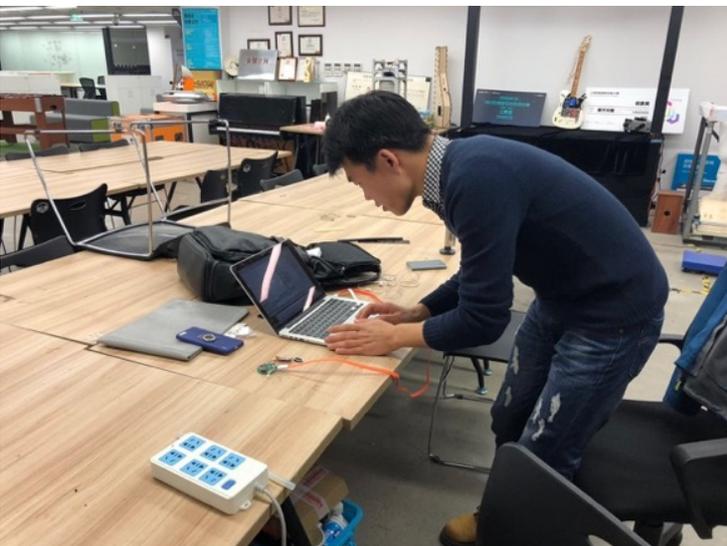
Founders: Ricky Ye (Chinese) and Rockets (Chinese) – both former XinCheJian members

Opened: 2013

Shanghai 上海



MAPS 5. Shanghai and Mushroom Cloud's location in Shanghai from its creation in 2013 to 2019 – screenshots of maps.baidu.com with added legend © author (October 2019)



08. Mushroom Cloud, Shanghai (September 2017, February 2018) ©author

Others

There are more hobbyist/co-working types of makers such as for example **Lab 0, Chaihuo** and Shenzhen DIY (**SZDIY**) in Shenzhen, as well as the **Beijing makerspace** in Beijing. These spaces are part of the culture of the makers in China but have not been further studied due to the selection made in the research project. They were pioneers, i.e. opened before the 2015 initiative of the maker movement in China. Some of the spaces have significantly evolved in the last years while others remain closer to their original establishment. Lab 0 in Shenzhen is similar to XinCheJian, but is more challenged to survive due to the shortage of members and funding and the Shenzhen ecosystem oriented on production rather than tinkering. It has become a geeky co-working space where the group, without almost any public events or common projects, shares the rent. Members share interests and space. Lab 0 has closed in March 2018 as the team could not be sustained with the membership fee rise after a rent increase (Discussion with Alexey, member of Lab 0, March 2019). Inspired by the map for makers made by Seeed Studio (see Chapter 4), Lab 0 in cooperation with Clément Renaud and the author worked on re-creating the map. The project has now disappeared as the makerspace was closed. The web page of Lab 0 and the project have closed and the main point of contact seems to have moved out of the country. This example illustrates the ephemeral and liminal makerspace trajectory in the Chinese urban fabric.

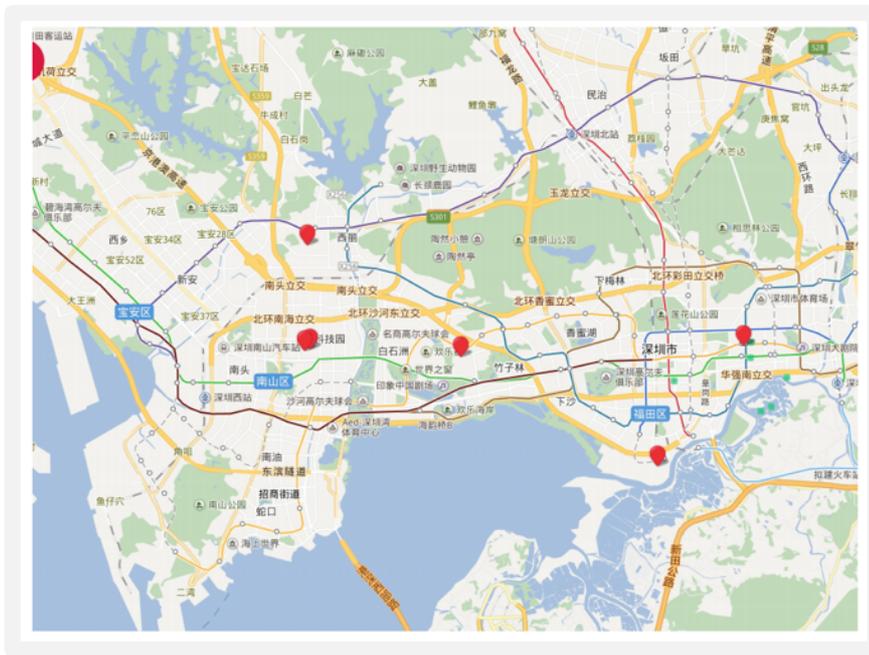


FIGURE 17:

Shenzhen map with maker hubs by Lab 0 (2017-2018)
screenshot ©author and EPFL team (March 2018)

Source: <https://Lab 0x0.github.io> (dead link)

Educational

The typology of the educational makerspaces, Fab Labs, library makerspaces and maker schools are not at the heart of this research but are part of the global picture, and it is important to represent them. In this part, therefore, I will briefly present and illustrate three spaces of this kind: **Fab Lab 0**, which is the Tongji university Fab Lab, Shanghai library's *chuang.xin kongjian* 创·新空间 and the **Atelier FabLab** in Beijing integrated into an art school, which in the long term is also developing as an open Fab Lab. They are products of the maker culture, often of individuals fascinated by making and looking for a way to implement the idea of sharing and teaching. They are part of the chronological evolution of the makerspaces in China.

Fab Labs were originally intended to educate, but in China we have seen different types of places. Fab Labs can be part of universities, private art schools; be independent or hybrid, such as Shenzhen Open Innovation Lab. In many makerspaces, people work on education projects as educators, freelancers or entrepreneurs. Education is a lucrative business in China, where competition is high and parents strive for their children to have the best skills possible. On the one hand, kids are let experiment, learn to trust themselves, and transform ideas into reality (Martinez & Stager 2013: 36) and also realize their creative potential (Guo 2016). On the other hand, the pragmatic position is that learning manual skills and having projects during leisure time can increase success of an application to a foreign university. In general, the maker culture surrounding education accompanies the will to rethink traditional Chinese education, which is imprinted with Confucian values and intellectual tasks, in opposition to manual work as Bailey Hu, a Chinese reporter for technode²⁴, writes (Hu 2018). Wen Wen, lecturer at the Institute for Cultural Industries at Shenzhen University, positively underlines the sliding of the original maker culture into more educational projects: "Makerspaces not only bring technological elements to the creative sector and encourage cross-boundary cooperation, but also march "creative spaces" into libraries, universities, and most importantly, into schools" (Wen 2017: 11). The hobbyist/entrepreneurial makerspaces also rely on the diversification interest of the parents regarding the kids' education.

The association of top-down governance and the grassroots maker movement have created more educational and entrepreneurial makerspaces, distancing them from the original ones. In 2018, Hu reports on technode that maker education companies received significant financial support in the lack of clarity and leadership in this industry: "In the past five months, 10 Chinese "maker education" companies have received over RMB 600 million (roughly \$90 million) in funding, according to a database of startups and funding" (Hu 2018).

²⁴ A blog on China's tech and startup ecosystems.

Litchee lab that transformed from a makerspace with educational workshop into an educational service is an example of makerspace transformation with a certain continuity. It was a way for the initial effort to survive and to keep its value in an entrepreneurial way. Each of the spaces connects in different ways to the educational type of makerspaces. Makerspaces survive partly by giving workshops and teaching others.



09. Litchee Lab projects, Shenzhen (March 2019) © author

How does it work?

Very different from one model to the other

Who goes?

Students, children, some hobbyists

Which spaces are part of the hobbyist / co-working category?

Fab Lab 0 in Shanghai
Atelier Fab Lab in Beijing
Litchee Lab in Shenzhen

Types of projects

LED lighted world representation DIY for kids, Introduction to Arduino for DIY houses, colorful cat with LEDs inside etc.

Events

Workshops, school or university projects, educational projects
Also, summer schools and weekend events

Fab Lab 0 Shanghai

FabLab 0 *zhongguo "shuzhi" gongfang – shanghai zhan* 中国“数制”工坊-上海站 is, according to their WeChat account, the first active Fab Lab in China. It was founded by Tongji University, highly ranked and recognized Chinese university, and more specifically the College of Design and Innovation. FabLab 0 compares its surroundings with Silicon Valley “future Chinese Silicon Valley, abundant surrounding resources help FabLab Shanghai play a pivotal role in incubating future design talents.” (Fab Foundation n.d.). This reference appears numerous in the maker narrative in China as a form of successful grassroots entrepreneurship.

The space is available for students of Tongji University to develop their projects and is at the same time a place of teaching where they can be trained in skills development. This makerspace also hosts the Fab Academy and is developing its own curriculum. The Fab Academy is hosted all around the world in several Fab Labs. During approximately 6 months, online classes take place weekly with tasks to accomplish after each class. The tuition fee is around USD 5'000 with half for the costs going to the main organization in the USA and half for the local Fab Lab. FabLabs such as Fab Lab 0 also organize alternatives, here specifically for student projects. The cost is high and Fab Academy offers a few scholarships to cover the central costs and shares strategies to find donors individually.

Self-definition (according to the community): Fab Lab

Members: depending on students' projects

Nationality: Chinese

Language of space: Mandarin Chinese and English

Material: tables, chairs, tools, 3d printers, laser cutters etc.

Membership fee: N/A (part of university)

Payment: university funding + Fab Academy

Website: <https://www.FabLabo.org/> / <https://www.FabLabs.io/labs/ShanghaiFabLab>

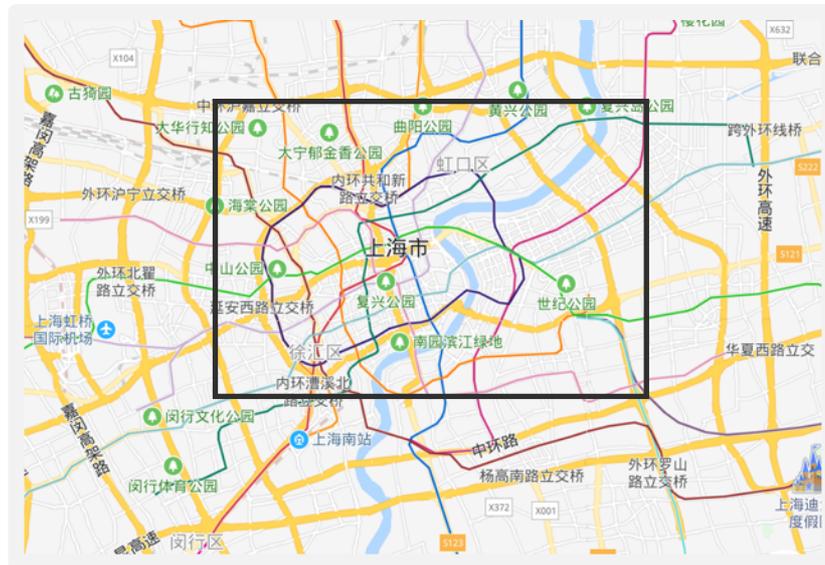
Address:

No. 281 Fuxin Road, College of Design and Innovation, Tongji University, Shanghai

Founders: College of Design and Innovation, Tongji university (Chinese)

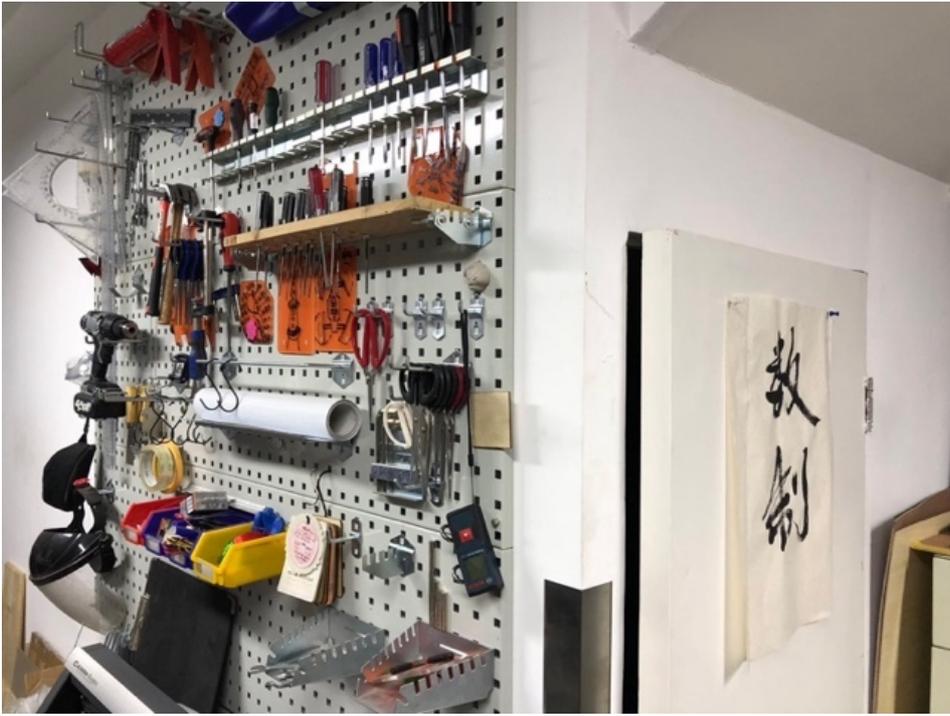
Opened: 2013

Shanghai 上海



Fab Lab 0
Tongji

MAPS 6. Shanghai and Fab Lab 0 Shanghai's location in Shanghai from 2013-2019 – screenshots of maps.baidu.com with added legend © author (October 2019)



10. Fab Lab 0 Tongji, Shanghai (March 2018) © author

Shanghai Library

There is a makerspace in Shanghai library called **chuang.xin kongjian** 创·新空间 – start, achieve something new, [create.new space], an original name to encourage a new place to create, to start something new in a library. The audience of it is therefore broader than just university students or school children. It is a space presenting toys, tools, and innovations, and also has a conference corner where innovators are invited to discuss their work. Everyone is welcome. According to the interview with Tang Liangtie, a manager at Shanghai library and Shanshan, from the Shanghai Jing'An Citizen Science Maker Development Center, a non-profit organization (NPO), “the Shanghai library started spontaneously working on innovation spaces in 2011/2012” (Liangtie, Shanghai library manager, September 2017). The library is more focused on readers. Nevertheless, the team tried their best to include “creative people”, reminding of Florida’s work on creative classes and cities (Florida 2003) (see Chapter 5) to adapt to societal changes and stay attractive also for younger populations (Interview Shanshan, former XinCheJian member, organizer of maker events at Shanghai library and founder of a non-profit organization supporting the maker culture, November 2017) and bring some tools, 3D printers and events into the making process. In order to organize a workshop, it is necessary to contact and apply to Shanshan who is in charge of events at *chuang.xin kongjian*. She is the link between makers and the library. In 2016, after the state initiative, the Shanghai government insisted on Shanshan opening a NPO, which would support non-profit oriented makerspaces.

Self-definition (according to the community): chuang.xin kongjian 创·新空间

Members: library card owners (for free), printing costs

Nationality: Chinese

Language of space: Mandarin Chinese

Material: tables, chairs, exhibit of objects and posters

Membership fee: none, free library access

Website: www.library.sh.cn/e

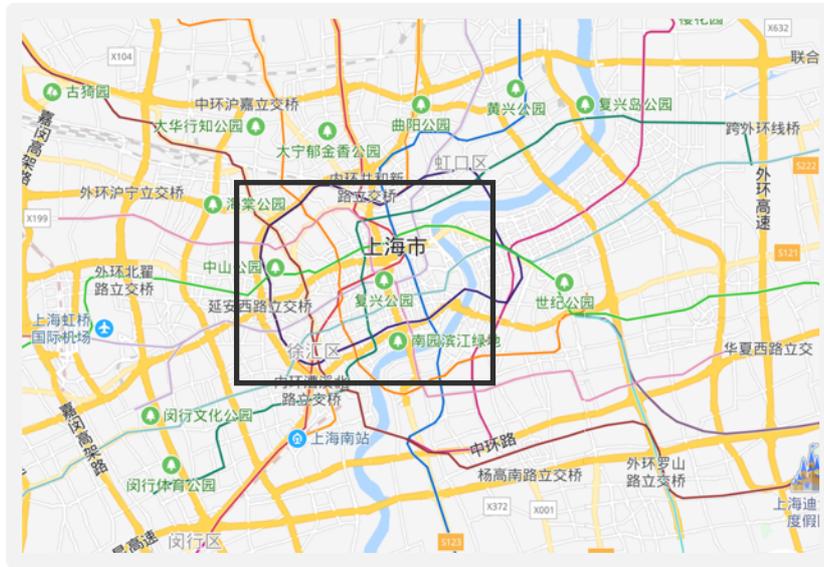
Address:

1555, Huai Hai Zhong Lu, 200031, Shanghai

Founders: Shanghai Library Management and Shanshan, former XinCheJian member

Opened: N/A

Shanghai 上海



MAPS 7. Shanghai and Shanghai Library's location in Shanghai – screenshots of *maps.baidu.com* with added legend (October 2019) © author



11. Chuang.xin kong jian at Shanghai Library, Shanghai (September 2017) © author

Atelier Fab Lab Beijing

Atelier FabLab *a te li er chuangke shiyanshi* 阿特黎尔创客实验室- describes itself as the first FabLab in Beijing. It is indeed the first one to appear on the FabLab network website. Sébastien, a French engineer, decided to change his life and build his own maker workshop. He started to collaborate in 2017 with a private art school called Atelier, founded in 2012 by a French artist and art teacher, using part of its space and sharing the administrative and communication work. The FabLab is situated in a central residential part of Beijing. The makerspace is a space with three types of activities for various sections of the public : educational (workshops, holiday or regular courses), professional (renting machines, training), and experimental for makers to use the space for their own projects (Atelier Sanlitun 2017). It is a grassroots makerspace focusing on education of diverse public.

Self-definition: Atelier Fab Lab 阿特黎尔创客实验室

Members: N/A

Nationality: Chinese and foreigners

Language of space: English, Mandarin Chinese, French

Material: tables, chairs, all materials

Membership fee: 200RMB / 4 hours all week – approx. EUR 29.6 / USD 28 (as of 11.10.19)
800RMB / month Mo-Fri / 8000 RMB / year Mo-Fri

Payment: looking for sponsor – French connections, former company etc.

Contact: Fab Lab@atelier.cn.com

Website: <http://www.atelier.cn.com/Fab Lab/>

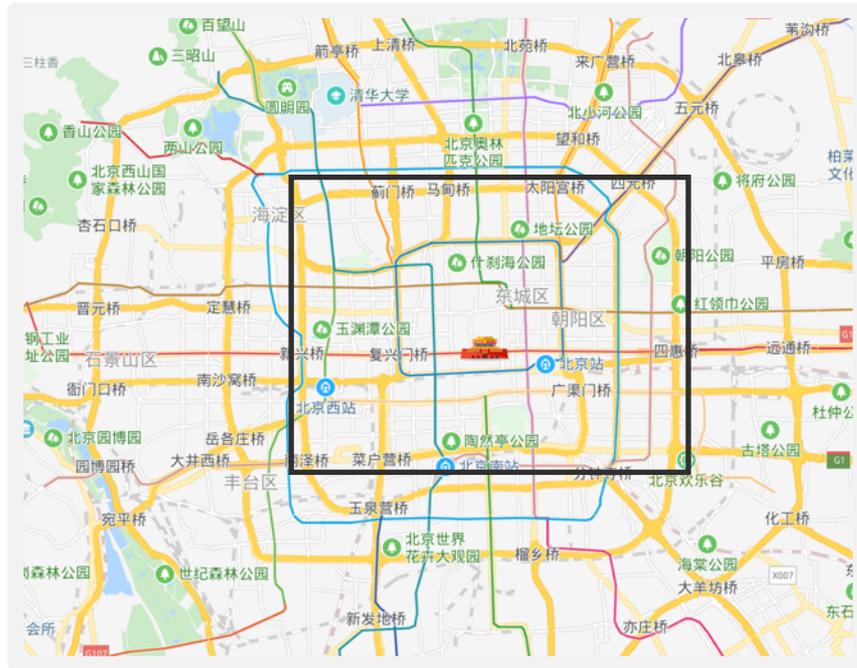
Address:

Room 502, Unit 1, Building 8A, Julong Garden, No.68, Xinzhong Street, Dongcheng District, Beijing

Founders: Sébastien Thomas, Marianne Daquet, Adeline Parrot

Opened: 2017 (art school 2012)

Beijing 北京



MAPS 8. Beijing and Atelier Fab Lab's location in Beijing – screenshots of maps.baidu.com with added legend © author (October 2019)



12. Atelier Fab Lab Beijing (September, November 2017) © author

Other: education businesses

Litchee lab (Nanshan district, Shenzhen) is an excellent example of a makerspace which turned into an educational business. The interest in maker education sparkled in the makerspace community, but the need for income, economic sustainability pushed Lit Liao, the founder, towards educational entrepreneurship. It is a commercial grassroots makerspace with strong values and without governmental support.

Litchee Lab was the former community occupying the space of Lab 0. Troublemakers, before Litchee Lab, were renting the space now occupied by Lab 0 – a community of geeks sharing a space to work on their own projects with tools and computers. They also occasionally organize events. The space was struggling in 2017 because the rent is shared by the members/occupants of the space without any external support. In 2018, it has dissolved.

Litchee lab, initially a makerspace, has become an educational service, while the maker community wanted to maintain a place for tinkering. Internal priorities have split the group in two. Witnessing slow changes of webpages (in comparison to the usage of WeChat), the website of Litchee Lab still shows a picture of what Lab 0 was in 2018. Litchee lab has gone through change of location and scope: from a makerspace with educational activities near Shenzhen University (later the space of Lab 0), to coaching educational services in Vanke cloud compound (same place as x.factory) and now providing educational services near Overseas Chinese Town (OCT), which is more central. Vanke Cloud is an area built as a new community with businesses, growing residential buildings and transportation services. OCT is more central and has been converted from an industrial area to a lively place for small businesses such as coffee places, bars, restaurants, bookshops, and start-ups. Both projects, Vanke Cloud and OCT, are part of the modern urban imaginary of Shenzhen going through a process of rebranding new communities. Financial challenges are one of the stimuli of evolution in services and business models. Lit Liao, the founder of Litchee Lab and a local Cantonese, believes in the new educational models for China. The strength of the Litchee Lab team has been to go with new opportunities without losing its educational values and mission to bring change to the Chinese educational traditions. Moving back from Vanke Cloud towards the center has allowed to change the business model and move closer to the families who will potentially be interested in their services.

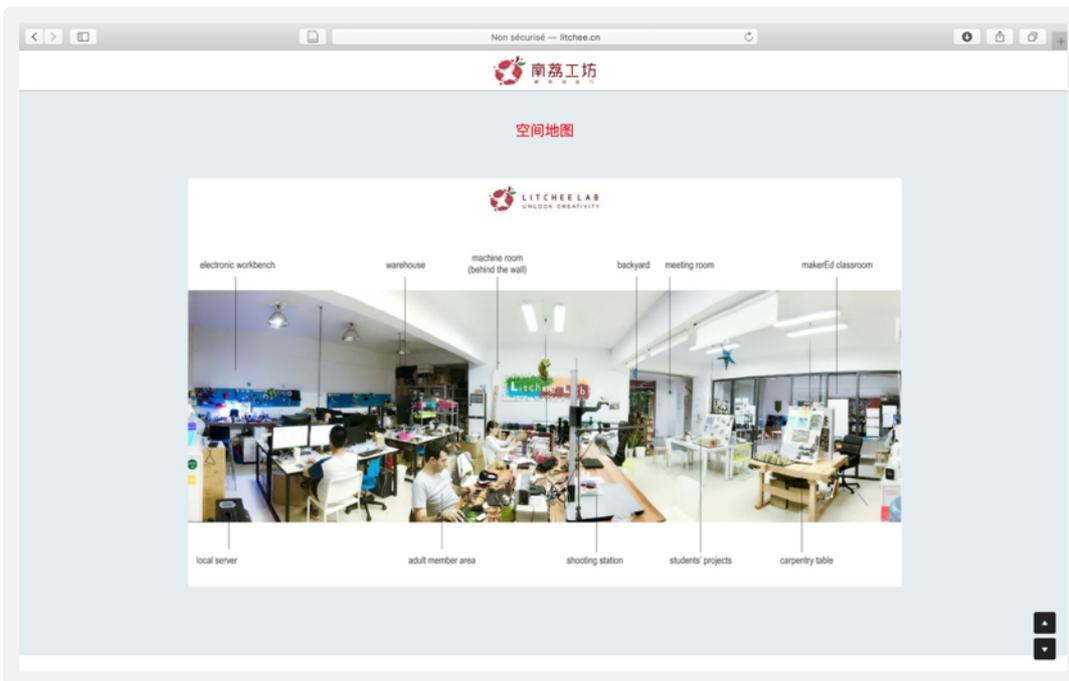


FIGURE 18:

Litchee lab plan on Litchee's website screenshot ©author (July 2019)

Source: www.litchee.cn



13. Litchee Lab, Shenzhen (March 2019) © author

There are many initiatives at the crossroads of education, DIY and business. Books are published and passionately interested specialists create materials for their students. The book (cover in Figure 19) edited by Teacher Wang about “How to make 3D-printers?” *3D dayinji ruhe dongshou zuo* 3D 打印机如何动手做 is a great example of these practices (Interview Teacher Yang, September 2017). This book is a personal project for schoolteachers, children, and anyone interested in the functioning of 3D-printers published by a Chinese university publication group.

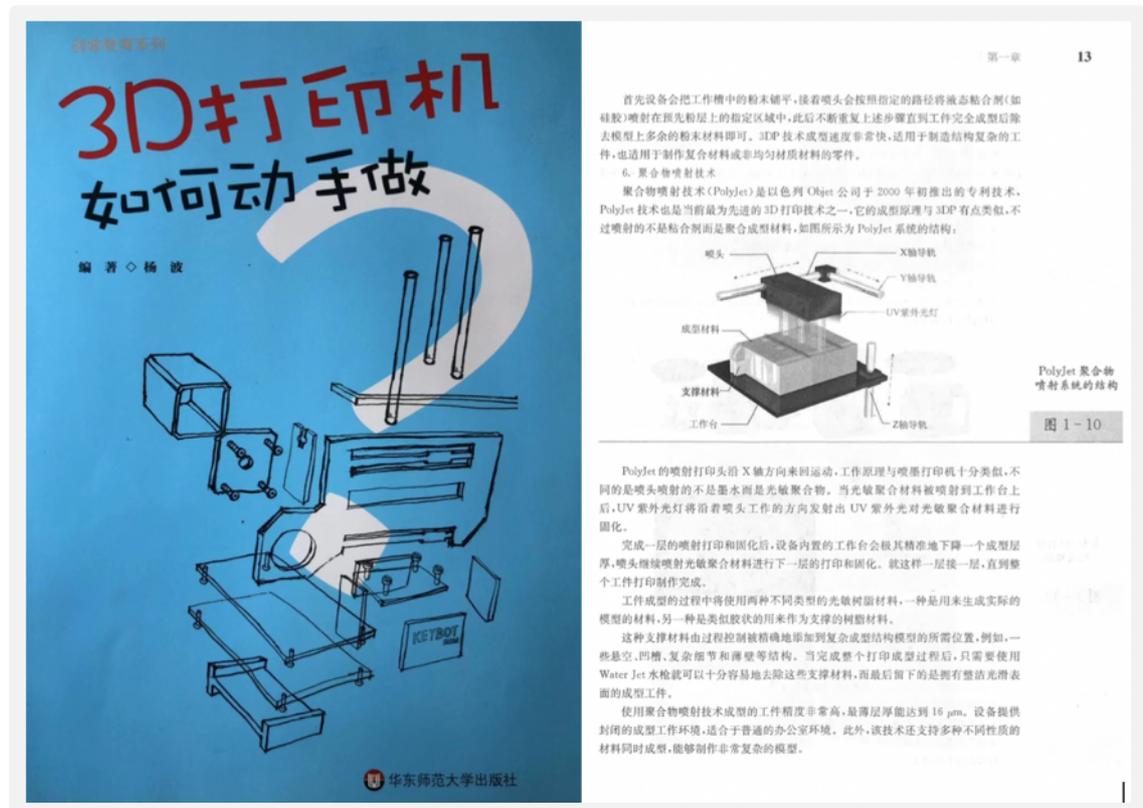


FIGURE 19:

Book cover “3D 打印机如何动手做” - “How to make 3D-printers?” and p.13 as illustrative example © (Yang 2015)

Scans ©author (July 2019)

Figure source: scan of book given by Teacher Yang to the author

There is no general repository or tutorials for “maker projects” but rather each type of project will have its own specific knowledge network online. Knowledge can also be transferred during events or through members. The fieldwork (see Chapter 3) illustrates the path of gathering information and knowledge. The information shared through maker practices, WeChat, and tutorials found online, for example on youtube.com, is main knowledge source until the knowledge is solid enough to be further shared and discussed.

Entrepreneurial / Platform

The entrepreneurial / platform type of makerspaces are places to implement projects. They consist of shared spaces with tools and desks, focusing on maker pro projects that aim at prototyping and developing ideas into products of commercial value. These platforms host individuals and delegations with ongoing projects, organize tours, connect the visitors to fast prototyping providers, and co-organize programs such as for example *Unleash the power of SDGs, Designed in Ethiopia, Low Speed Electric Vehicle Bootcamp, Fab Village* and more (see szoil.org). These platformized entrepreneurial basically test new ways of working and evolve rapidly depending on the success of former initiatives. They are hybrids between hobbyist makerspaces and businesses. Filling a gap between companies and individuals, they are places where you can interact with others, create businesses. It is a place of collaboration and self-determination for their members through the realisation of individual or team projects and for the managers in terms of careers and networks. This culture has mostly been seen in Shenzhen with the famous Shenzhen Open Innovation Lab (SZOIL) and x.factory, but there is also a former space manager of XinCheJian in Shanghai who manages Innomaker+ and whose activity fills the gap between hobbyists and businessmen. These spaces can look similar to a hobbyist / co-working space but are more oriented towards entrepreneurship and professional making. Usually, the makers who join these communities already have a clear idea of their project and a developed plan. Locals and foreigners come to Shenzhen to prototype their project and discover the ecosystem willing to bring a successful product to the market. In Shanghai, makers are more hobbyists or start as hobbyists before developing a clearer project. In Beijing, the makerspaces visited are rather entrepreneurial or alternative but do not correspond to the concept of national and international platform observed mainly in Shenzhen and partly in Shanghai. The Pearl River Delta region is the major manufacturing base in China for electronic products for example, creating a unique ecosystem and a destination for commercial activities. The platformization of makerspaces has mostly taken place in Shenzhen due to its environment with a main welcoming function for teams, people, and projects. They are also illustrating the platformized "Fourth Place" with the dimension of communities collaborating online. They are business grassroots makerspaces with local support.

How does it work?

pay a monthly fee or a fee to use the machines, specific events or workshops

Who goes?

Freelancers, maker pro, entrepreneurs

Which spaces are part of the hobbyist / co-working category?

x.factory in Shenzhen + SZOIL in Shenzhen

Innomaker+ in Shanghai + Coderbunker in Shanghai

Types of projects

Hardware devices such as solar powered Arduino survival kit or connected small heating system for food, coaching and teaching for bringing a project to manufacturing, art installations etc.

Events

Maker Faires or carnivals, small conferences, events when visiting groups come, welcoming delegation and interviewers, organizing tours

x.factory

x.factory (without name in Mandarin) is operated by Chaihuo Makerspace *Chaihuo chuangke* 柴火创客, which is Shenzhen's first makerspace since 2011 and whose partner is Seeed Studio, an open-source hardware company working internationally since 2008.

Chaihuo makerspace is the first makerspace in Shenzhen and the second in China according to their website (Chaihuo Makerspace 2019). It has a symbolic or even iconic role as it is the makerspace that was visited by Li Keqiang in 2015. His visit received wide media coverage (CCTV, China News, Voice of China, State News, etc.) and was part of the spreading of the governmental initiative. Eric Pan, the owner and founder of Seeed Studio is also the hobbyist behind Chaihuo makerspace. After several years with two organizations, he decided to create x.factory, filling the gap between companies, products (professional level), and makers (hobbyists) supporting the maker pro (high level makers).

The x.factory is supported by Vanke, the biggest Chinese real estate company with its main office in Shenzhen, which reduces the rent to attract clients, specially creators and small entrepreneurs. Litchee Lab, the education enterprise mentioned earlier, also has its offices in the same compound. X.factory features young staff, willing to connect in China and the world and open to try new kinds of businesses.

X.factory has residencies – it can host, after internal approval, individuals or teams to implement their projects. Also, their members are selected by the team; they are local, national, and international as shown on the picture below. In their space, x.factory has decided to show the variety of members to their visitors by hanging a map with their pictures and locations. The Chaihuo / x.factory / Seeed Studio group is organizer of the Maker Faire in Shenzhen (see Chapter 5), which is the biggest in Asia and among the four biggest in the world (two in the USA and one in Italy) (Stauer 2016).



14. The members of x.factory, Shenzhen (September 2017) ©author

Self-definition: “open factory” and connecting platform

Members: maker pro (selected), residencies, platform

Nationality: Chinese and foreigners

Language of space: Mandarin Chinese, English

Material: tables, chairs, all materials

Membership fee: 1500RMB/month/pers fixed desk – approx. EUR 191.6 / USD 211.6 / 600RMB/month/pers hot desk – approx. EUR 76.6 / USD 84.6 (as of 11.10.19)

Organization: operated by Chaihuo makerspace, partnered with Seeed Studio

Contact: WeChat: Chaihuo chuangke kongjian 柴火创客空间, Facebook or website

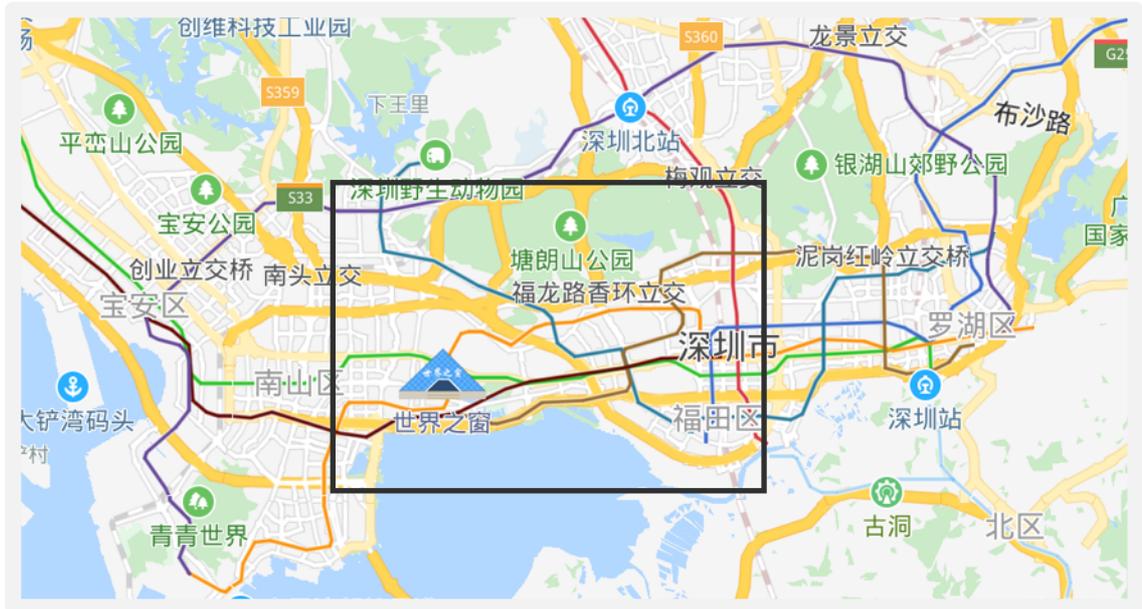
Website: <https://www.xfactory.io>

Address: x.factory, B608, Design Commune, Vanke Cloud City, Dashi 2nd Road

Founders: Chaihuo makerspace / Eric Pan (Chinese)

Opening: 2017

Shenzhen 深圳



MAPS 9 x.factory's location in Shenzhen - screenshots of maps.baidu.com with added legend
© author (October 2019)



15. x.factory, Shenzhen (November 2017, March 2018) © author

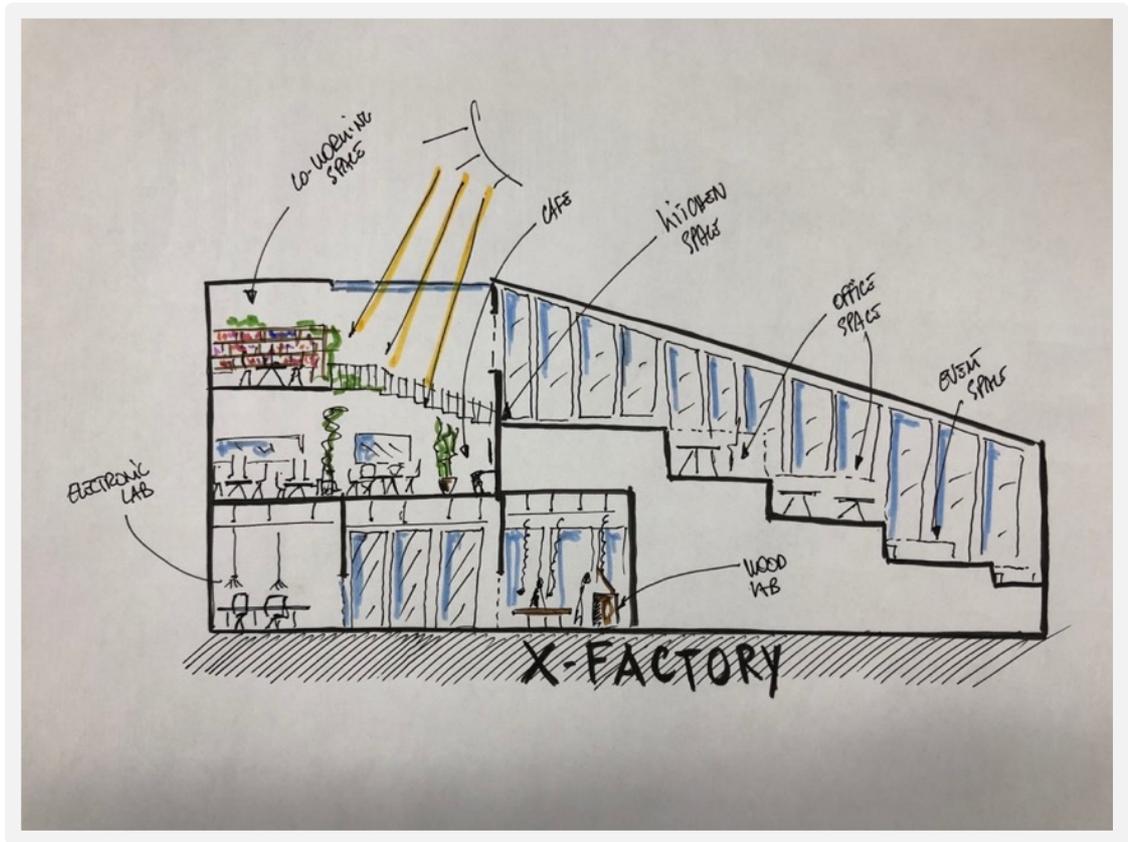


FIGURE 20:

Map of x.factory

©Emanuele Protti, architect (March 2018)

Reproduced with the kind permission of Emanuele Protti

Shenzhen Open Innovation Lab (SZOIL)

The Shenzhen Open Innovation Lab (SZOIL) *Shenzhen kaifang chuangxin shiyan shi* 深圳开放创新实验室 is also the first Fab Lab in Shenzhen authorized by MIT CBA as a research and development partner of Fab Lab 2.0. SZOIL was co-founded by Shenzhen Industrial Design Profession Association (SIDA), which is a non-profit organization founded in 2008, and was the first Chinese association to join the World Design Organization (WDO), which is in charge of the Shenzhen International Industrial Design Fair (SZDIF). The second co-founder is Maker Collider, a platform to develop next-generation IoT from the Maker community in China founded in 2015 in the context of the Chinese governmental initiative for mass makerspaces. David Li is the co-founder of XinCheJian, Maker collider and Shenzhen Open Innovation Lab. Through these spaces, he has evolved from being interested in hobbyist makerspaces to developing a hybrid entrepreneurial maker platform in Shenzhen with the city of Shenzhen. He has a wide international network and is considered a pioneer and the face of the international maker movement in China (WEF 2019). SZOIL is a business platform with governmental support.

While sharing the welcoming position of the platformed makerspaces, SZOIL, being co-founded by a public entity, has a different position. It has the capacity of being involved and to co-organizing events such as the Belt and Road International Forum in 2017 and 2018.





FIGURE 21:

Belt and Road and Maker Forum advertisement 2017 & 2018 screenshots ©author (October 2019)

Source: SZOIL's blog on <https://medium.com> (September 2017 and 2018)

Self-definition: Fab Lab and Fab Lab 2 – “space and platform to worldwide makers to connect and cooperate”

Members: makers with projects, platform, Internet support etc.

Nationality: Foreigners and Chinese

Language of space: Mandarin Chinese, English

Material: tables, chairs, all materials

Membership fee: N/A

Organization: operated by Chaihuo makerspace, partnered with Seeed Studio

Contact: Facebook / twitter / WeChat / LinkedIn

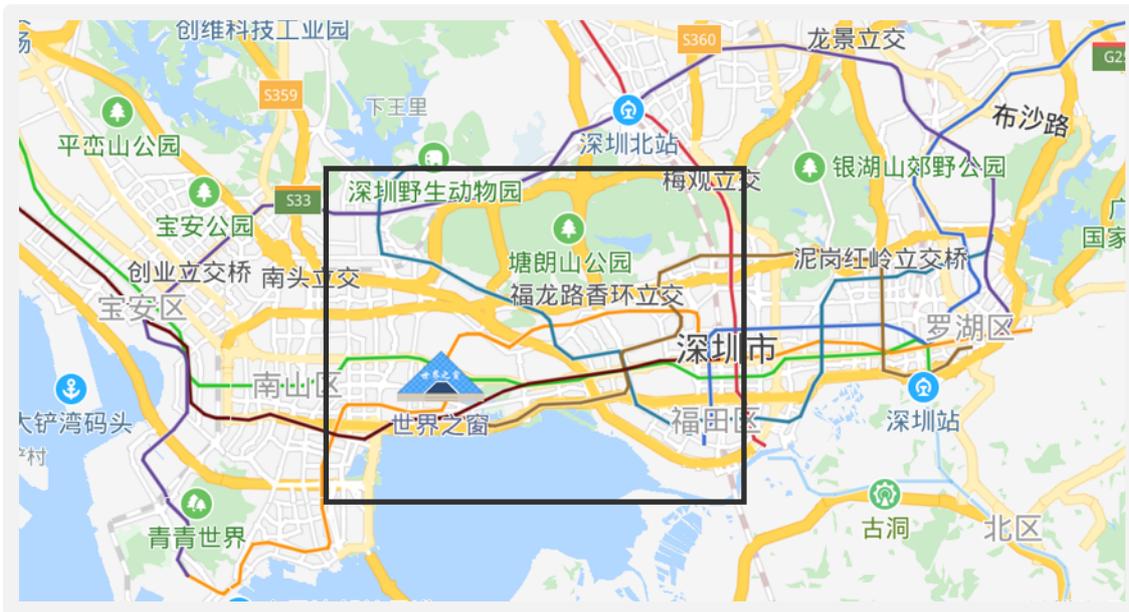
Website: www.szoil.org

Address: x.factory, Sino-Finnish Design Park, Shihua Road, Futian bonded area, Shenzhen

Founders: Chaihuo makerspace Shirley Feng from governmental entity (Chinese) and David Li, co-founder XinCheJian (Taiwanese)

Opening: 2015

Shenzhen 深圳



MAPS 10. Shenzhen and SZOIL's location in Shenzhen - screenshots of maps.baidu.com with added legend © author (October 2019)



16. SZOIL, Shenzhen (November 2017, March 2018) © author

Others: makerpro, business platforms and accelerators

Some makerspaces are fully business-development-oriented (such as the Tsinghua accelerator, which supports and pushes for new grassroots innovation to be successful. There are also other places like Innomaker+²⁵, which connects advanced creators in their development and brings them to the next step from being a maker to being an entrepreneur. Amanda Ma, a former space manager of XinCheJian, is the Director of Innomaker+. There is also Coderbunker founded by Ricky Ng-Adam, co-founder of XinCheJian, which is a “community focusing on people who learn, design, develop, create and invest in technology”(CoderBunker 2018). It is a place of empty desks and a few computers where IT freelancers gather and connect to companies needing specialized skillsets from freelancers. It has a motivated community and is linked to the Agora space, co-working with its co-founder Frédéric Bazin, and is situated in the building above the bunker. Coderbunker organizes regular free trainings, mentoring, and other events. Coderbunker is a grassroots business with freelancers and entrepreneurs.



17. Coderbunker, Shanghai (March 2018) © author

²⁵ Innomaker+ was the name of this maker pro space until the beginning of 2018. It is now called Innospace Labs.

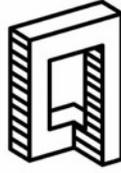
Other types

The three proposed types: hobbyist/co-working, educational and hybrid entrepreneurial are the most significant in the Chinese makerspaces landscape, nevertheless these types are non-exhaustive. Q-space for example is a queer feminist makerspace in Beijing *taí'er nuquan chuangke kongjian* 酷儿女权创客空间 (Q-space blog 2016). Q-space is a LGBT+ art community and makerspace that has been officially supported by Mitch Altman, co-founder of Noisebridge in San Francisco and active in the Chinese maker landscape. During his residency at Tsinghua, he has spotted Q-space and has offered his support. Thanks to him, Q-space also took part to the Maker Faires in Beijing organized by the Chinese government. It has no official space but is run in a shared house in a Beijing hutong²⁶. It exists in the living room of members and through events in cafés, bars or art galleries. The community, which mainly organizes activities and meetings, temporarily ceased its activities in 2018 due to political tensions regarding their topic and restarted later the same year.



18. Q-space, Beijing (September 2017) © author

²⁶ Typical ancient housing of Beijing with 1 or 2 floors.



With the current 'cold climate', things haven't seemed very hopeful for our community recently. Q-Space shut its doors in April this year and since then we have been busy working out our next move. We are therefore proud and excited to announce that we are planning to defy this cold weather and reopen in two weeks on November 25th, near the old space by Zhangzizhonglu station! Save the date in your diary, more information will come soon! In the meantime, please get in touch with Maoyi if you would like to help us with renovations, or get in touch with Jo Dee if you would be interested in becoming an event organizer or volunteer. We look forward to us continuing our fight together! Peace and love from the Q-Space crew.

今年的“冬天”来得很早，我们的社群在挫折下艰难存留着一丝希望。今年四月Q-space关了门，从那时候开始我们一直在考虑将来的运营方式。现在我们很兴奋和骄傲地想跟你们分享我们开启今年“过冬”的方式，两周之后11月25号我们宝贵的Q-space重新开张！新空间离旧的不远，在张自忠路地铁站附近。请大家记好日期，我们接下来几天会不断更新消息。在这段激动人心的时段内，如果有人想帮忙装修，请跟毛衣联系。如果有人想领导活动或者当活动的志愿者，请跟Jo Dee联系。我们很期待和你们一起庆祝Q空间安乐长寿，跟你们一起坚持坚持！么么哒！Q-space的伙伴。

FIGURE 22:

Q-space publication on reasons for closing, on 10 November 2018
screenshot ©author (October 2019)

Source: Q-space's Facebook page (October 2019)

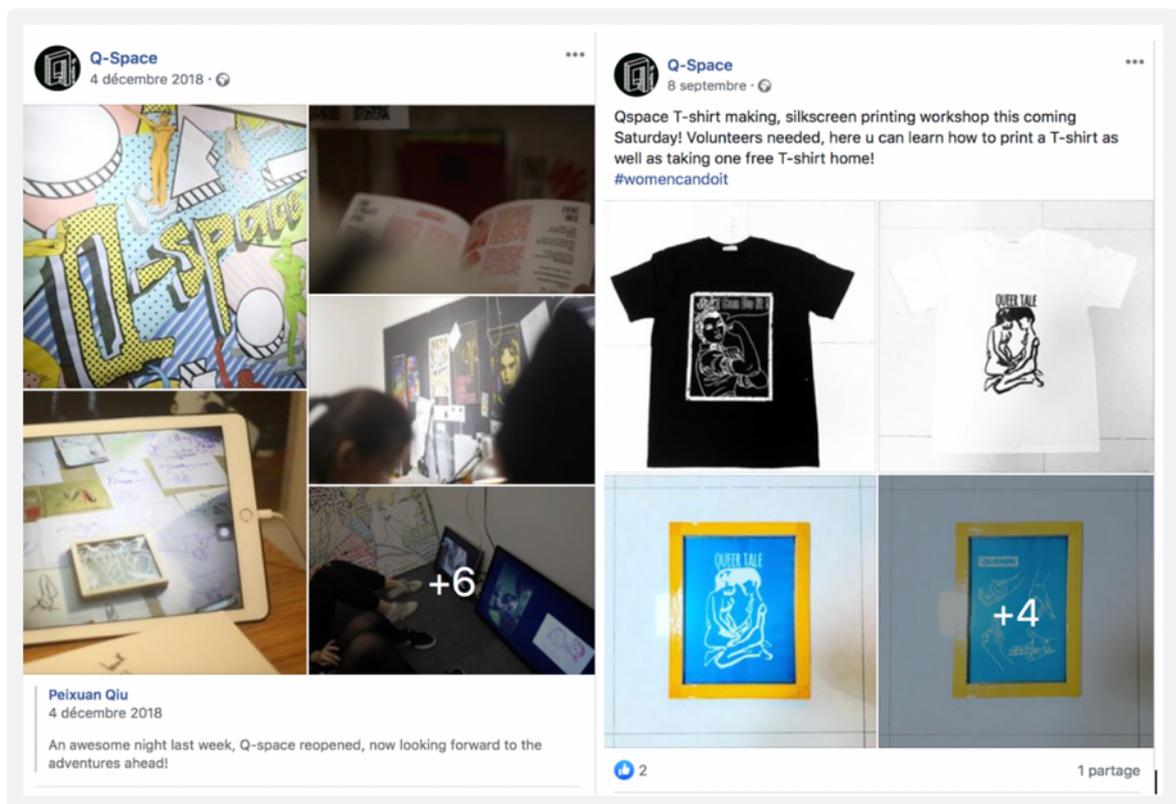


FIGURE 23:

Q-space publications on events, on 4 December 2018 and 8 September 2019 screenshots ©author (2019)

Source: Q-space's Facebook page (October 2019)

Q-space has a changing community of Chinese and Non-Chinese members. There is no fee and there is no specific place but there are activities and projects going on. One of the projects started in 2017 by Elna was the silk-screening of bags and T-shirts with their messages such as “我们 can do it” which when pronounced is heard “women can do it”, “Queer tale” and more. The making of these T-shirts at Q-space have also influenced the research of the author (Chapter 3). The activities taking place in this safe and inclusive LGBT+ space do not seem subversive yet the communities’ openness and will to discuss gender expression and sexuality may bother certain authorities. The members of the communities worked hard to open up for these discussions and welcome any interested person. The combination of the tension mentioned in their publication, and a certain tiredness of constantly communicating and defending their position, may have brought to this temporary pause.

CONCLUSION

The model of *early* makerspaces here comes from the co-creating model highlighting peer-production and shared tinkering (Kera 2014). It is a community model where people share tools and knowledge to create *fun things*. The spaces survive thanks to membership fee, workshops, sponsoring, and donations.

In China, sites and large equipment are expensive, while gadgets, consumables and fast prototyping are cheap. Even though spaces rely on makers, the opposite is not true. The makerspaces presented in this chapter attract Chinese and international makers due to their unique access to electronics, all possible cheap goods, and fast prototyping. China has indeed advanced skills in design for manufacturing linked to the country's past as the "factory of the world". The story of the makers starts in China in 2010 with XinCheJian, and spread quickly within the country. Facing the possible end of fast economic growth, China requires more innovation and understands the potential of makerspaces with Chinese characteristics – with a favorable ecosystem, a potential market and drive towards economic success. The translation and co-optation of the maker culture in China has not only created two types of makerspaces: bottom-up hobbyist and top-down entrepreneurial. These are not two limited typologies but are dynamics, which created many types of multi-faceted makerspaces. These have been categorized in this research into three types: hobbyist/co-working, education and entrepreneurial/platforms. This variety of makerspaces are part of a Fourth Place as defined by Morisson (2018). The type of makerspaces as well as the type of place they are situated in are evolving chronologically.

Supporters of makerspaces are diverse: real-estate companies (for x.factory), local governments (for SZOIL, XinCheJian) or private companies (for Mushroom Cloud, x.factory) have been supporting makerspaces. This can be part of a political "show" or can attract more investment. But the representation of makerspace development in China as a boom is erroneous. The number of makerspaces has increased and decreased, and this dynamic will continue with moments of trend and interest, and moments of disinterest. Makerspaces depend on the people who make them, and also on the opportunities they meet on their paths. Some makerspaces are also businesses in themselves and are facing financial sustainability challenges (Litchee Lab, Atelier Fab Lab).

The concept of *makerspace* has an inclusive umbrella function. It has been translated into Mandarin Chinese, reinterpreted and reshaped by the socio-political environment.

Individual members are at the heart of the makerspaces in China. To understand the intricacy of this complex context, fieldwork was essential. The next chapter will present methodology, path of research, fieldworks and people of references of this research.

田野工作和研究

Tianye gongzuo he yanjiu

Researching makerspaces in the context of China is a process built on intellectual reflections, field experiences and experimentation as well as efforts at restitution. Central to this are the people who are part of the maker culture and who enable and feed the discussion. Tools, skills, as well as empathy, curiosity and energy are required.

Developing a methodological framework and conducting an exploratory fieldwork represent the first step of the research. An intense three-month period fieldwork and the surpassing of one's comfort zone to participate into the field of research constitutes the second step. The third is composed of a reflection on the disciplinary approach and the organization of workshops both before and after the intense period in China. At the same time, the network of people of reference grows. The fourth and last step is to reconstitute the research.

This chapter presents the methodologies, the research and fieldwork, the role of multidisciplinary, the people of reference and the experimental approach tested in this context.

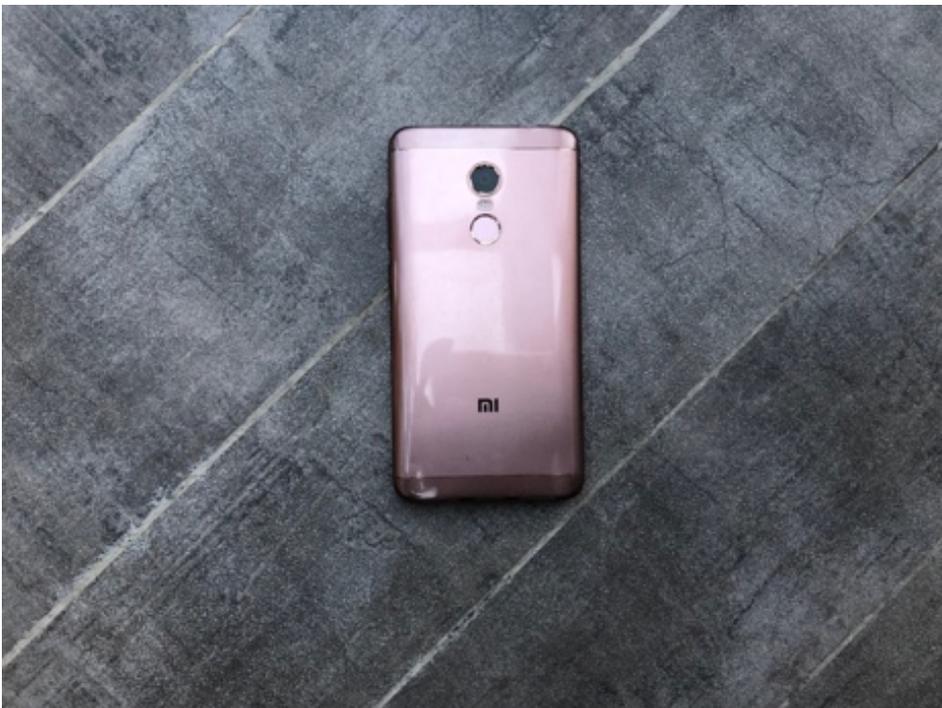
BEING PART OF A COMMUNITY: METHODOLOGY AND FIELDWORK

Methodology and tools

In addition to the thematic analysis, this research aims to combine and adapt methodologies in order to capture the dynamics of the movement in a broader sense. It is therefore a great opportunity to test new approaches or a new combination of approaches in the field.

To understand places, it is important to understand that people are at their heart. This thesis project relies on classical social anthropology qualitative methods such as interviews, discussions and participative observation (Sardan 2008; Schatzman & Strauss 1972; Yin 2017). These methods generated data about communities of innovation as social practices as well as the articulation between the maker movement and the making of/in Chinese cities. The aim is not only to understand the makers in China but to gain a better understanding of the dynamics and of the network that they might represent, which is in this specific research in the context of China. Makerspaces are ephemeral, liminal and marginal but not to be minimized in terms of impact. In China, the initiatives in and around the maker culture reflect the local ecosystem, in terms of speed, opportunities, failures and the interest of governmental entities including urban instances to accept or create new types of urban spaces. The concept of place is and here the "ethnographic place" is described "as a way of knowing" in which "different types, qualities and temporalities of things and people come together as part of the process of the making of ethnographic knowledge or ways of knowing" (Pink & Morgan 2013: 354).

The tools of research were mainly the phone, the notebook with a pen and the camera.



19. Research tools: phone (March 2019) © Bloch & Bolli

The phone was an essential tool used every day to be in touch with the makers: follow the projects and conversations, write to one or another; use maps to find places, choose the best path to get there by public transportation, also to pay the coffee, the taxi or something at the shop, to record interviews and more. Initially, recording interviews was planned to be done with a specific tool: a professional recorder, which I used for my Master thesis but the convenience of the phone, the quality of the recordings and also the easier acceptance by the interviewees of it made it the best option. I would start a conversation and make sure a certain trust was in place before asking to use the phone as a recorder. Quickly interviewees would forget about it lying on the table, while the recording device would always remind that this is a “serious moment”.

Sometimes, I wouldn't record but take notes instead. This decision was linked to the moment and the way people were. Sometimes by not formalizing the interview, I understood that I would get more interesting information or more trust. Nevertheless, in general, I would rather opt for recording. This way, my focus would entirely be on the person I was listening to, with eye-contact and being more aware of the environment. I would then transcript the whole interview or the most important parts or questions.

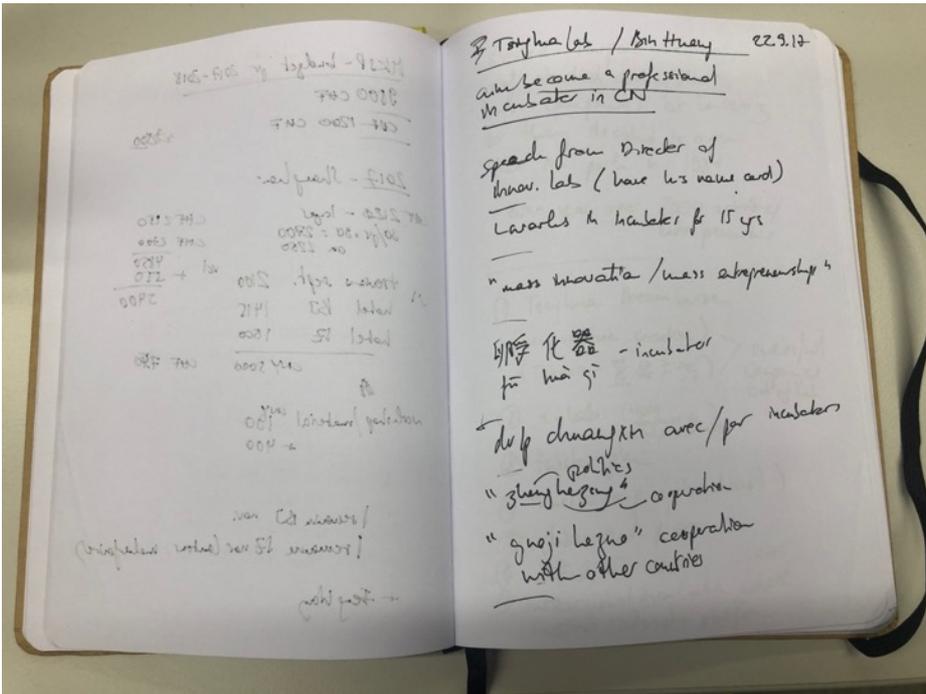
The notebooks are also essential elements of research. I always carried one to take notes of what I observed, to take interview notes or simply bring some ideas together by drawing concepts. Also, it was very important for the projects I was conducting at the makerspaces: when trying to determine a protocol for silk screening, learning about 3D printing, planning the next trip with all the elements to not forget during the trip, writing interview questions, addresses if not already on the phone.



20. Research tools: notebook (March 2019) © Bloch & Bolli



21. Research tools: notebooks of the research (October 2019) © author



22. Research tools: notebook extract (October 2019) © author

The camera was also used to complete the pictures taken on the phone. For practical reasons, I did not always take the camera with me but would ask if I can take pictures when discovering new places. Nevertheless, when I spent a lot of time in a place, I would take pictures asking permission if someone would be in the center of it but without asking permission²⁷ if it was the larger space / place – I wouldn't even know whom to ask. When you visit a place, someone guides you through but when you are part of a space/community, then you become your own guide.



23. Research tools: a camera (March 2019) © Bloch & Bolli

²⁷ Limits of respect are never crossed. One of the makers I was often seeing was wearing sunglasses in the space as he had walked into a glass door and hurt himself. Despite laughing altogether, others also wore sunglasses in the space. I took a picture which I shared with him but he made me promise I would never use it in my research.

Multidisciplinarity

Adapting to a fast-changing world, ethnography, and its place of research, evolve within multi-sites and interdisciplinary work.

Ethnography moves from its conventional single-site location, contextualized by macro-constructions of a larger social order, such as the capitalist world system, to **multiple sites of observation and participation that cross-cut dichotomies** such as the "local" and the "global," the "lifeworld" and the "system." Resulting ethnographies are therefore both **in and out of the world system**. The anxieties to which this methodological shift gives rise are considered in terms of **testing the limits of ethnography**, attenuating the power of fieldwork, and losing the perspective of the subaltern. The emergence of **multi-sited ethnography is located within new spheres of interdisciplinary work**, including media studies, science and technology studies, and cultural studies broadly (Marcus 1995: 95).

Exceeding classic research methodologies and create multi-sited, fast-changing and multi-layered narratives of research is needed (Driessen & Jansen 2013; Hine 2007; Holmes & Marcus 2008; Pink 2015; Tedlock 1991). But innovating and experimenting can also be problematic in terms of an audience respecting methodological tradition and new generations of scholars bringing new narratives to various audiences (Hine 2007: 665). Innovating research need to be enriching rather than limiting. Not only is the research multidisciplinary (anthropology, urban studies, policy / political studies, Chinese studies) and multi-layered (people, cities, systems), but also the research on makerspaces in China is also multi-sited (Shanghai, Shenzhen, Beijing and more). As Marcus explains, the ethnographer's role evolves and develops with a sense of activism and as a part of a mobile field of research (Marcus 1995: 19). Fast-changing complex ecosystems need to be understood more deeply, and, through observation, transformed into "urban knowledge" (Agier 2014: 1). The researcher develops a chronology of the history of spaces and emergence of the studied object without developing a hierarchy of sites in terms of importance. This complexity of the representation of the city is also reflected in the research. Several levels of understanding are part of it, namely, as Ramadier presents below, the behavioral, social and physical levels constitute the spatial representation of the city. The defined spatial object or concept, here makerspace, allows to better understand the behavioral, social and physical levels of the spatial representation of the Chinese city.

The representation of the city, based on local knowledge and past fieldwork, and with multi-sited and multi-levels research methodologies, allows a deeper understanding of the complex system where the maker culture happens. To conduct the research: semi-structured interviews, experimental WeChat interviews, discussions, participative observation with projects, photography and mapping were at the heart the methodologies along with listening, compassion and patience. The main tools for the project were a smartphone with WeChat, Alipay, Baidu Maps and other Chinese apps installed; a notebook to write down discussions, thoughts and ideas, and a pen as well as a camera to take pictures and a notebook. In addition, the computer as well as linguistic and cultural skills were essential to realize the project.

Part of the research methodology is to establish and regularly complete a list of people of reference, interest and influence around the maker movement in China and more specifically the context of makerspaces in Shanghai, Shenzhen and Beijing. This list of reference counts around 100 people from tinkerers to key persons in the Chinese or global maker movement linked to China and the maker imaginary.

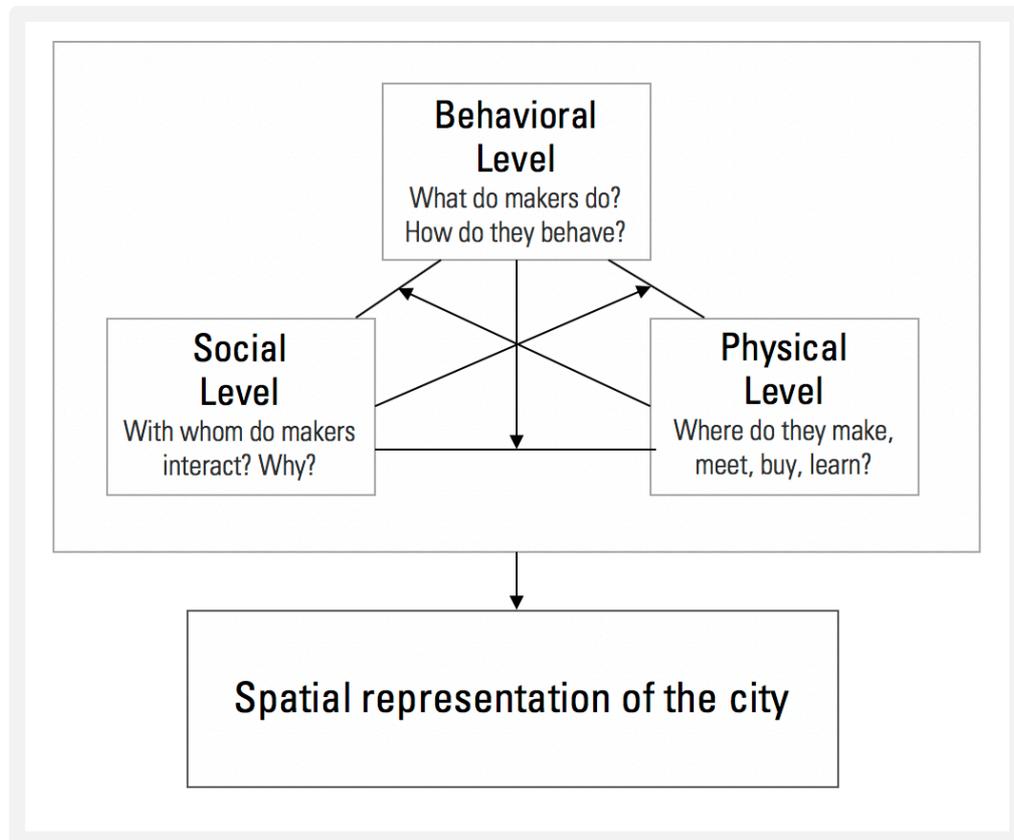


FIGURE 24:

Spatial representation of the city by Ramadier
©author (October 2019)

Redrawn based on Ramadier (2004)

Organization of fieldwork

This thesis is based on fieldwork. Fieldwork conducted yearly has enriched the transductive approach while the research questions were refined in a heuristic manner. Figure 25 helps to better understand the milestones: 1. establishing the research basis and networks in 2016 with an exploratory fieldwork; 2. Acquiring deeper understanding and experience of the topic in 2017 with an exchange at Curtin University in the Digital China Lab, a methodological workshop on how to study makerspaces, and a 3 months intensive fieldwork in China; 3. Expanding the research in 2018 with an exploratory trip to Ethiopia, a multidisciplinary research fieldwork in China and the participation to conferences in 2018; and 4. Stabilizing, confirming data and sharing in 2019 with a last field trip to China, participation to conferences, the writing of a book chapter and finalizing of the thesis in 2019.

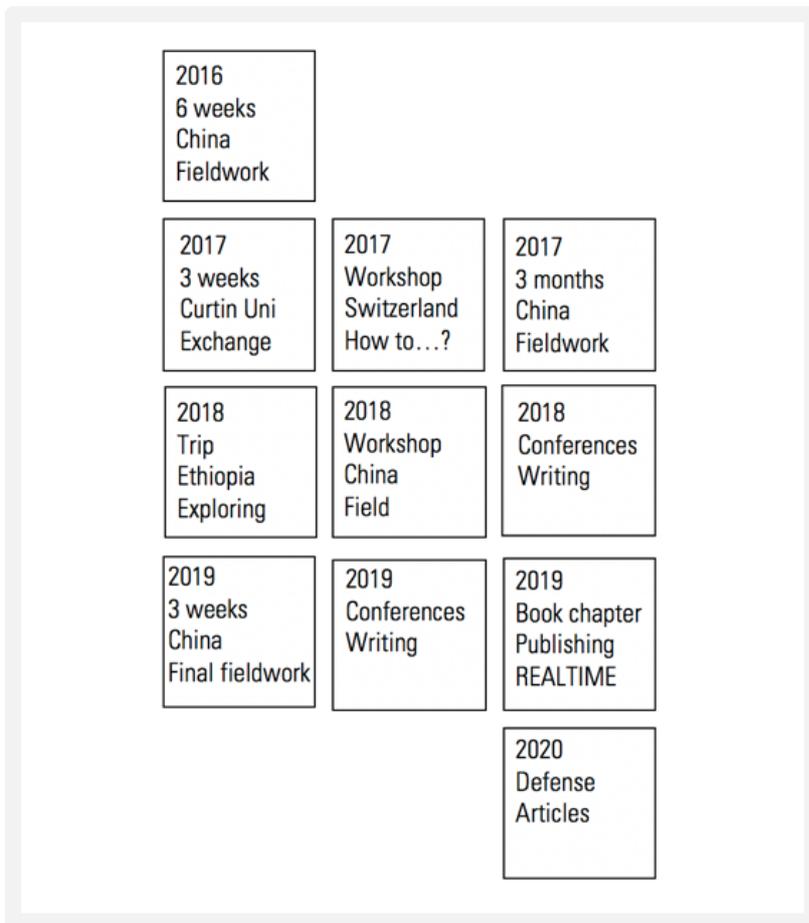


FIGURE 25:

Visual on research timeline and path of the author

©author (October 2019)

Research path

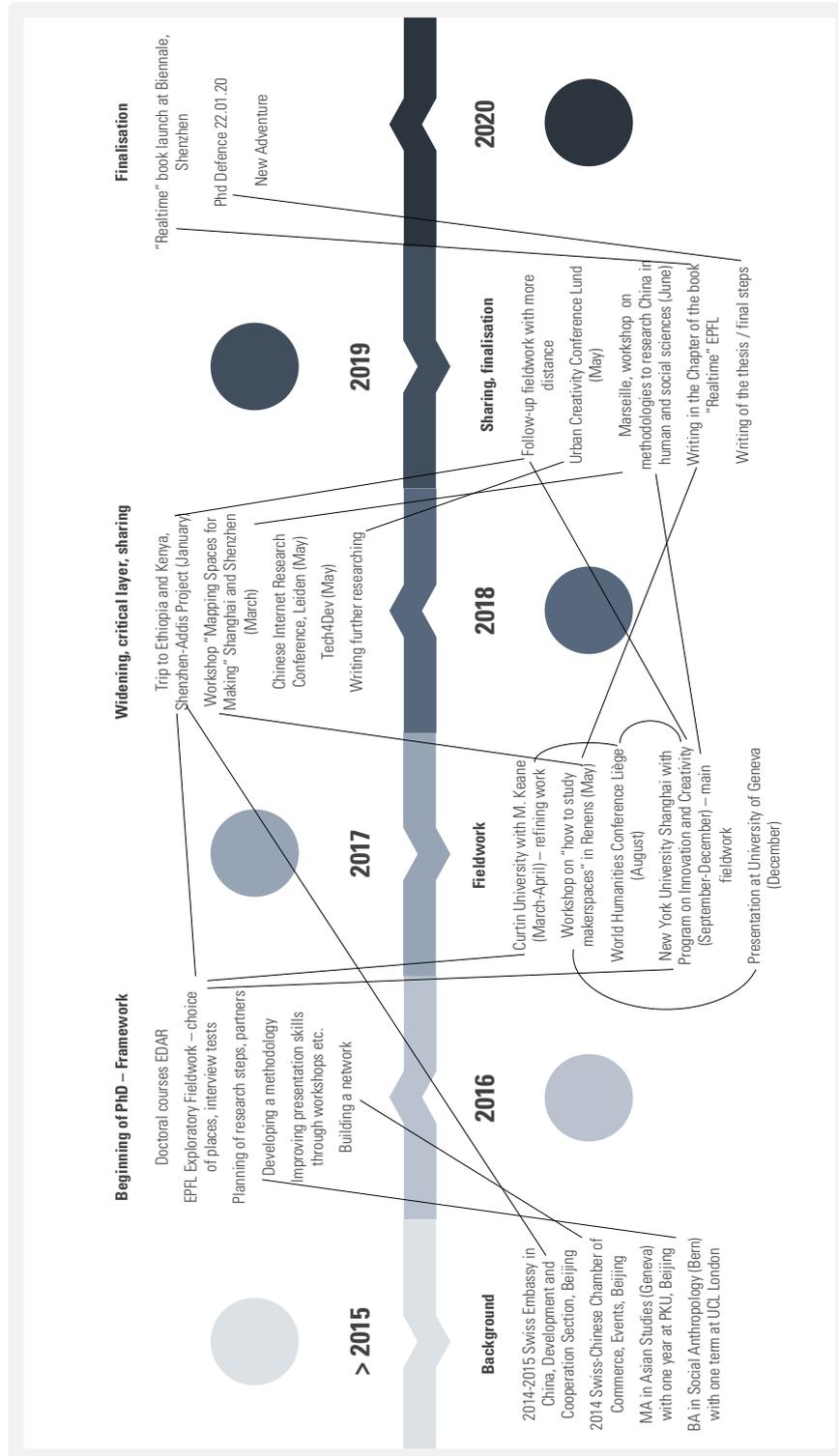


FIGURE 26:

Visual on research timeline and path of the author
 ©author (October 2019)

The fieldwork was a form of initiation through the Chinese maker culture and a few of the spaces. A liminal research experience of maker.

In a first step and next to the mandatory courses of the Doctoral School of Architecture and City Sciences (EDAR) of Ecole Polytechnique Fédérale de Lausanne (EPFL), an exploratory fieldwork of 6 weeks in 2016, mainly in Beijing, Shanghai and Shenzhen, allowed to understand how the spaces work, how to join the movement and who to contact. The participation at diverse events such as workshops, conferences, Maker Faires and meetings allowed creating a mental mapping to define the meaning of places and to situate them in each chosen city.

The exploratory period had confirmed the interest in the three cities: Shanghai, Beijing and Shenzhen where I started building and seeing the wider picture and network needed to grow the project. For this first fieldwork, the project included a budget for a 10-day trip, but as I wanted to obtain a clearer impression of the topic, I decided to extend the stay by several weeks. To do so, I was warmly and thankfully welcomed onto the couches or guest beds of friends - Elena and Ruben, Ellen, Paloma and Yang Yang. I spent the summer in China and attended Fab12 in Shenzhen where the Fab Lab apostles meet. A colleague recommended I attend a specific presentation. Instead of that, however, I went on a tour of makerspaces and therefore challenged his authority. By doing so, I met a key person: Nael, an Ethiopian student and maker who was doing an internship at Shenzhen Open Innovation Lab. I later met him again in Beijing, where we talked about the project and which turned out to be "Design in Ethiopia", which I had warmly supported. Going to Ethiopia, meeting the maker-entrepreneurs and the Minister of Science and Technology, and following the project which impulse is unique and fascinating even if challenged by the politic situation of the country. It has contributed greatly to understanding the role of the platformized maker culture in Shenzhen. In Shenzhen, I met professor E. Gattegno who was in charge of the Center for Innovation, Design and Entrepreneurship (CIDE) at the Chinese University of Hong Kong (CUHK) in Shenzhen and at the same time working at New York University Shanghai (NYU Shanghai) in the Special Program for Creativity and Innovation and we discussed a possibility to become a visiting scholar. When I met him in Shanghai again a few weeks later, he handed over a key of the office to me. I was very surprised and explained it would rather be for 2017. This is how one year later I could join NYU Shanghai for 3 months as a visiting scholar and conduct my main fieldwork. I was also my director's assistant in her summer school in Shanghai and organized with swissnex Shanghai an afternoon of exploration of makerspaces and a follow-up debriefing.

In 2016, I also contacted Professor Keane at Curtin University in Australia. He published many books and articles on creative China and leads the Digital China Lab at Curtin University. The presentations and exchanges on the topic in March 2017 allowed me to enroot my research topic and to join the World Humanities Conference (WHC) in Liège in August 2017 presenting in Keane and my name. At that time, I met Henry Li and Bin Huan who would be important connectors for my fieldwork in China. For the first time in social sciences, I discovered a panel openly sponsored by a private company, namely Tencent with "The revitalization of traditional culture in the digital era".

In May 2017, EPFL's research team and myself organized a 2-day workshop on "how to study makerspaces?" in les Ateliers de Renens in Switzerland, which allowed to share challenges and ideas of tools to study changing spaces.

Before leaving Switzerland, I found a room in an apartment in Shanghai, as my friend Emma's roommate had just left. I could therefore jump into my fieldwork more easily. The three month fieldwork started in September 2017 with ten days of common intense fieldwork in Shanghai and Shenzhen with Clément Renaud, colleague on the SNF project, who also introduced me to key people such as Paul, a former XinCheJian active member, in Shanghai who would then introduce me to several interesting people and Violet from x.factory in Shenzhen, which allowed me to more easily connect with x.factory and the maker faire in Shenzhen. Back in Shanghai, Phyllis from NYU Shanghai helped me open a new bank account and buy a good phone deal, while my friend Jing Yuan helped me to re-use Taobao and Jindong (JD)... How can you survive in China without access to online shopping? These tools were also essential to realize the projects and order the material needed.

While in Shanghai, I became a member of XinCheJian, the first makerspace of China, and tied and continued growing my network in Shanghai, Shenzhen and Beijing from this point. Being part of the community. I have been enthusiastic sharing the space with other members who became friends, learning from them and having my own projects. I had been to XinCheJian already on their open night in 2016 and we had presented, with Clément, the project in September 2017.



24. Presenting the research at XinCheJian open night, Shanghai (September 2017) © author

Often, few or almost no member showed up during the open night, rather curious potential future members. Curious about our presentation, several members of XinCheJian were present that night, wondering about this question of community and how to maintain it. I couldn't answer but be part of it.



25. Participative observation at XinCheJian, Shanghai (October 2017) © author

Looking for a project, I started by joining a 3-D printing workshop on a weekend before becoming a member. I proudly realized a (leaking) 3D printed vase but never reused what I learned. I had no concrete project in which this skill would be useful and the difficulty was quite high to fully integrate the knowledge.



26. 3D-printing workshop at XinCheJian, Shanghai (September 2017) © author

I then tried to create a map of the important places for makers in Shanghai on GitHub based inspired by the one we had started with Lab 0 members in Shenzhen and Clément Renaud but my project failed despite the support of some members. It was an excellent way to see from whom and how I could get support. Writing on the group chat, I got no response the first time. I later, at

a XinCheJian party, got introduced to someone who was actually happy to help / explain to me the technical side. He came after work one evening to the makerspace just to help me. But the community was not interested in the map making of places of interest. They already found their place and were working on their projects individually. On one hand, my lack of knowledge was limiting as the specialists thought I understand their recommendations. In addition, carrying on an individual project with a limited interaction with the community was not in my interest.

While visiting Q-space in Beijing, I discovered the manual process of silk screen printing. Elna showed me the process and I even made a bag with one of the models.



27. First self-made silk-screen printed object inspiring the rest of the experimentation, Beijing (October 2017) © author

During the process, I was readily accepted in XinCheJian and my new friends were supportive, enthusiastic – and therefore empowering - of the silk screen printing project I had started. After going back to Beijing, Elna sent me instructions and lists of materials to buy on Taobao to realize my own projects. As soon as I wanted to start, however, I discovered that Pascal had planned to start the same project. So, there were already two of us ... and then three with Lu Feng. The support of other makers had a very positive impact on the experience. I remember an unknown Chinese member of XinCheJian, to whom I handed my phone so he could talk with one of the Taobao material suppliers who had called me to clarify my order. I was surprised by the call and didn't understand the rather technical jargon but he helped me with so much patience, despite the fact that I was interrupting his work without really giving him the choice. This patience and kindness of the Chinese people in general and of my friends in particular have accompanied me in my travels.

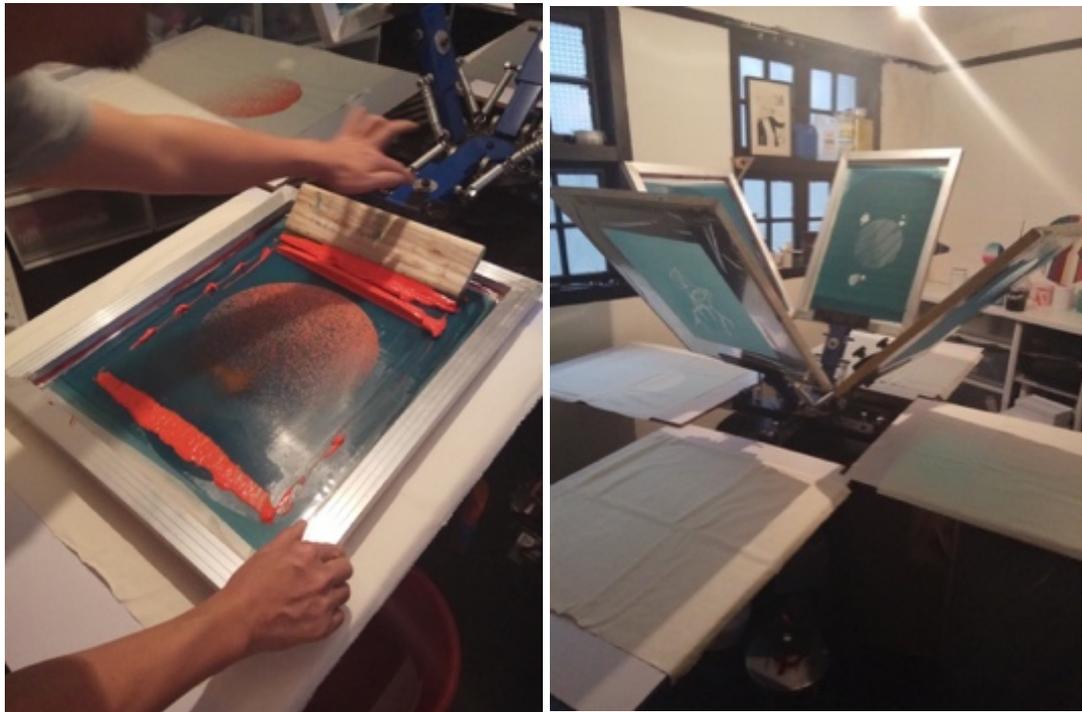
I have to say it took us a while to achieve something worthwhile with our silk screen printing project. Later, we were amazingly lucky to learn more with a team of near-professional silkscreen painters.



28. Parts of the manual silk screen printing process, Shanghai (October and November 2017)
© author

The others were as well curious and communication started to be more fluid. As part of the project, I also made mini-interviews at the end to give a voice to the members through WeChat, a few answered and it showed again how to make it work. The world of the makers is open and at the same time not easy to access. Without specific knowledge in technology, I had to break out of my comfort zone, accept failures, develop my skills and grow in the network through fieldwork and projects. Speaking Mandarin was important to live in China and understand better the context. Nevertheless, surprisingly, many conversations and interviews took place in English. Makers are Chinese and International, and most of all speak English.

One week before the end of the 2017 intense fieldwork, I met, at a XinCheJian party, the already mentioned designers who were almost professional silk screeners and had a private workshop where they invited us to work and improve our work. Incomparable to our manual system, the partly automatized workshop was a highlight.



29. Private silk screen printing workshop, Shanghai (December 2017) © author

Not only was staying in China for several months fascinating for my research but also for understanding deeper cultural aspects. For example, when coming back from Shenzhen's Maker Faire by train and stopping on the route to spend a weekend with a friend's family to discover, among other sights, her family's pig farm in a village where the concept of maker is totally foreign.

In 2018, between the end of the fieldtrip and the workshop ten days workshop in China, I traveled to Ethiopia on a personal travel in order to understand the context in which the project "Designed in Ethiopia", would be developing. The project, which I have partly co-written, involves several actors: grassroots, private and governmental. The visit has been enriching for the research and has pushed the project forward. I met and visited iCog Labs²⁸ founder and marketing manager, the Minister of Science and Technology of Ethiopia and several of his collaborators, as well as diplomats living on spot. China's investments are visible on the street with buildings in construction from Chinese companies and streets or avenues named after the collaborations of

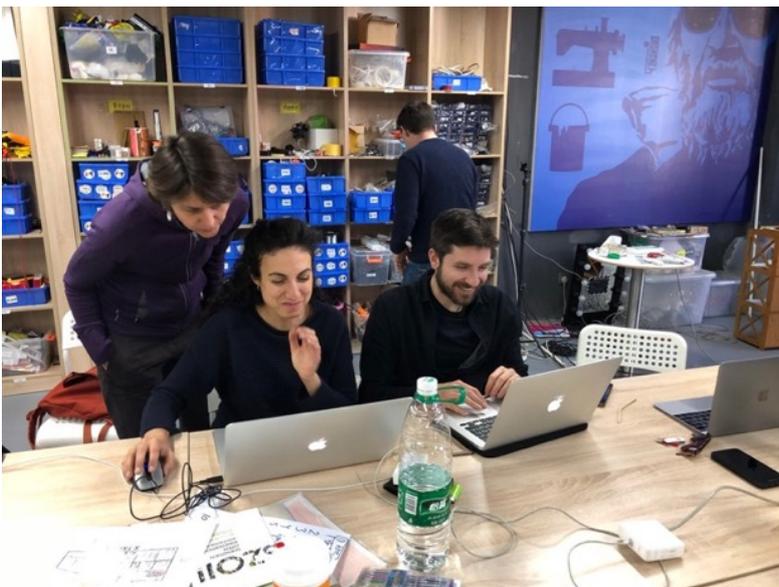
²⁸ An AI Research and Software Development company based in Addis Ababa, cooperating with local universities and with Singularity Net in Hong Kong.

the two countries. The contrast with the bottom-up initiative, I was supporting and had meetings for, was strong.



30. Addis Ababa, Ethiopia (January 2018) © author

The next phase after the visit of Ethiopia was a multidisciplinary workshop with EPFL's research team in China. The ties bound during the 2017 fieldwork allowed to organize a successful collective workshop in 2018. After the Chinese New Year, the SNF team organized ten days workshop "Mapping spaces for making" with international and local guests. Clément and myself organized workshops in Shanghai and Shenzhen and brought with us Anaïs Bloch, a designer from HEAD in Geneva, and Emanuele Protti, an architect from Politecnico di Torino (PoliTo), to create participative workshops and prepare a zine in Shanghai and Shenzhen. We were joined by Florence Graezer Bideau and Marc Laperrouza to finalize the project in Shenzhen.



31. Florence, Anaïs, Emanuele and Clément, Shenzhen (March 2018) © author

On the plane back from China, I contacted and asked by a person I had never met, if I'd like to participate on a TV show about makers in China. Someone had given them my name. I had left for several months and couldn't follow up on the proposal. When I contacted him again a year later, he had left the country.

Finally, in 2019, a last stay of three weeks for this thesis helped complete the missing interviews, pictures and information for the completion of the thesis. The last meetings were a great opportunity to share my knowledge with a certain distance.



32. Meeting with Lit Liao from Litchee Lab, Shenzhen and meeting with Nael and Kenna at Tsinghua University, Shenzhen (March 2019) © author

The total amount of time spent in China for this research and initiation, including the participation at events, the visits of spaces, the participative observation and membership at XinCheJian, the organization of workshops and the interviews is of seven months (six weeks in 2016, three months in 2017, three weeks in 2018 and three weeks in 2019). Having lived in China for three years between 2011 and 2015 simplified the fieldwork with cultural, economic and socio-political experiences built up during these years of academic and professional experiences. During that time, I have studied for one-year Chinese at the Peking University (PKU / BEIDA) in Beijing at the same time as conducted a Master degree research on “Urban and social development in China: Beijing and three creative and hybrid spaces of musical expression” (2011-2012). I came back to China in 2014 to work at the Swiss-Chinese Chamber of Commerce and later at the Swiss Development Agency of the Swiss Government in Beijing.

The last part of the process is to share the work by presenting the research at conferences, such as the Urban Creativity Conference in Lund, Sweden in May 2019, publishing articles or chapters such as in the book *Realtime* (to be published in December 2019) and the thesis.



33. Presenting at Urban creativity conference Lund, Sweden (May 2019) © author

EXPERIMENTING WITH METHODOLOGY AND WORKSHOPS – AN EXPANSION

The experimental aspect of the workshops allows to reconsider data directly with the people involved in the topic as well as reconstitute and share the collected information and feedback (Bolli et al. 2020). In Renens, with researchers facing similar challenges, and in Shanghai and Shenzhen with the people from the maker movement and people interested in the topic interpretations could be tested and widened. Our public events, a one-day multidisciplinary research workshop to map, visualize and document places and spaces where people have been experimenting new ways to tinker with technology in Shanghai. The workshop was followed by a conference given by the team on 3 March 2018 at XSPACE. In Shenzhen, the web-to-book binding workshop where the zine, which had been finalized before, was bound together with the participants of the event after a roundtable on 10 March 2019 was a successful experiment. The team has created a collaborative document, called a zine. A Zine is magazine, especially a fanzine (a magazine, usually produced by amateurs, for fans of a particular performer, group, or form of entertainment) (Oxford Dictionaries 2019) Making a zine has been a great experiment of collaboration – making together to map the makerspaces. and followed by a book Launch of “The Field Guide to Hacking” by Michelle Poon from Dim Sum Labs Hackerspace in Hong Kong. This event took place on 10 March 2018 at the Shenzhen Design Center. Not everybody was interested or had time to join but all warmly welcomed us in their spaces for a visit and sharing insights. This experimental type of workshop was very enriching, to reflect on the engaging research, learn from others, confirm data and consider multidisciplinary and original type of methodologies.

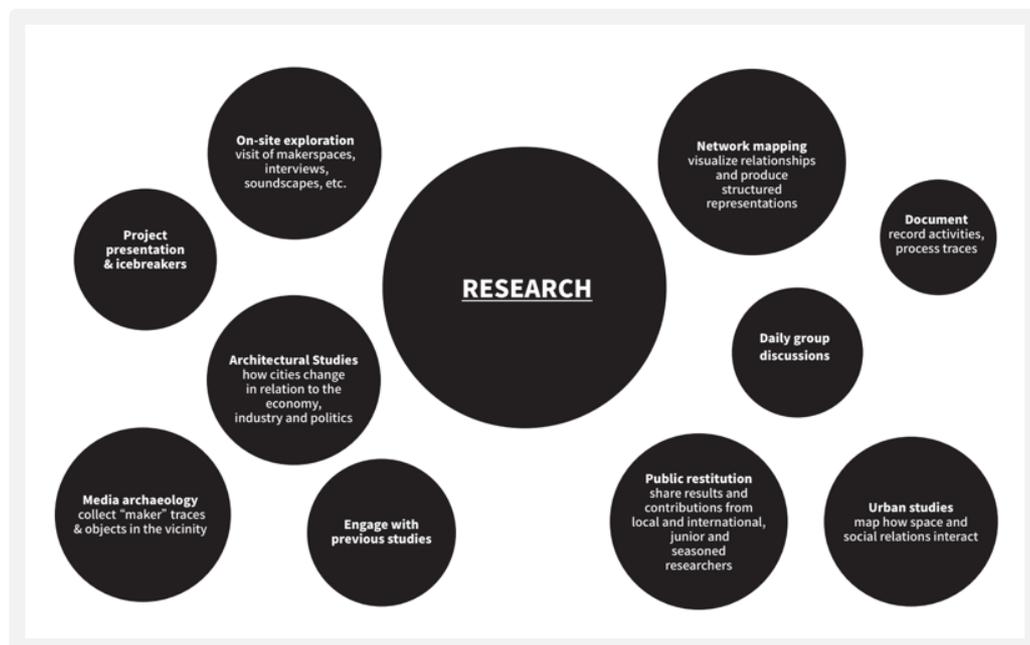


FIGURE 27:

Zine extract from the project “Mapping makerspaces”
© Bloch, Protti, Bolli, Renaud (March 2018)

Source: zine, also available on mapmakers.space

Ideally and without forgetting the specific skills of each representative of a discipline, a mixed research team aims at constructing a multidisciplinary methodology, which does not lose the disciplinary thinking of each but gathers each specificity into one (Ramadier 2004: 433). Restitution in anthropology is one of the aspects developed and experimented in the intense workshop which was considered as essential. While the three months fieldwork in 2017 was important to gain an emic vision of the makers, the workshop with external participants as part of the research team and as part of the public workshops, was part of a transition from the emic to the etic views and to review them. The distance with the object was central to the quality of the discussions and an opportunity to share about the collected data.

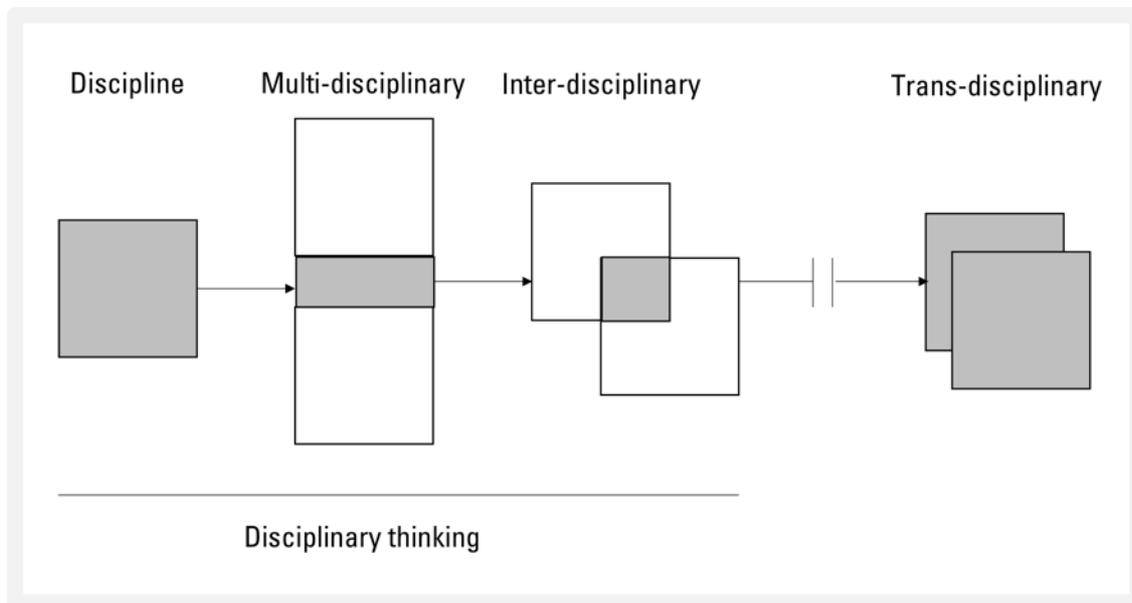


FIGURE 28:

Co-disciplinarity by Ramadier
 ©author (October 2019)

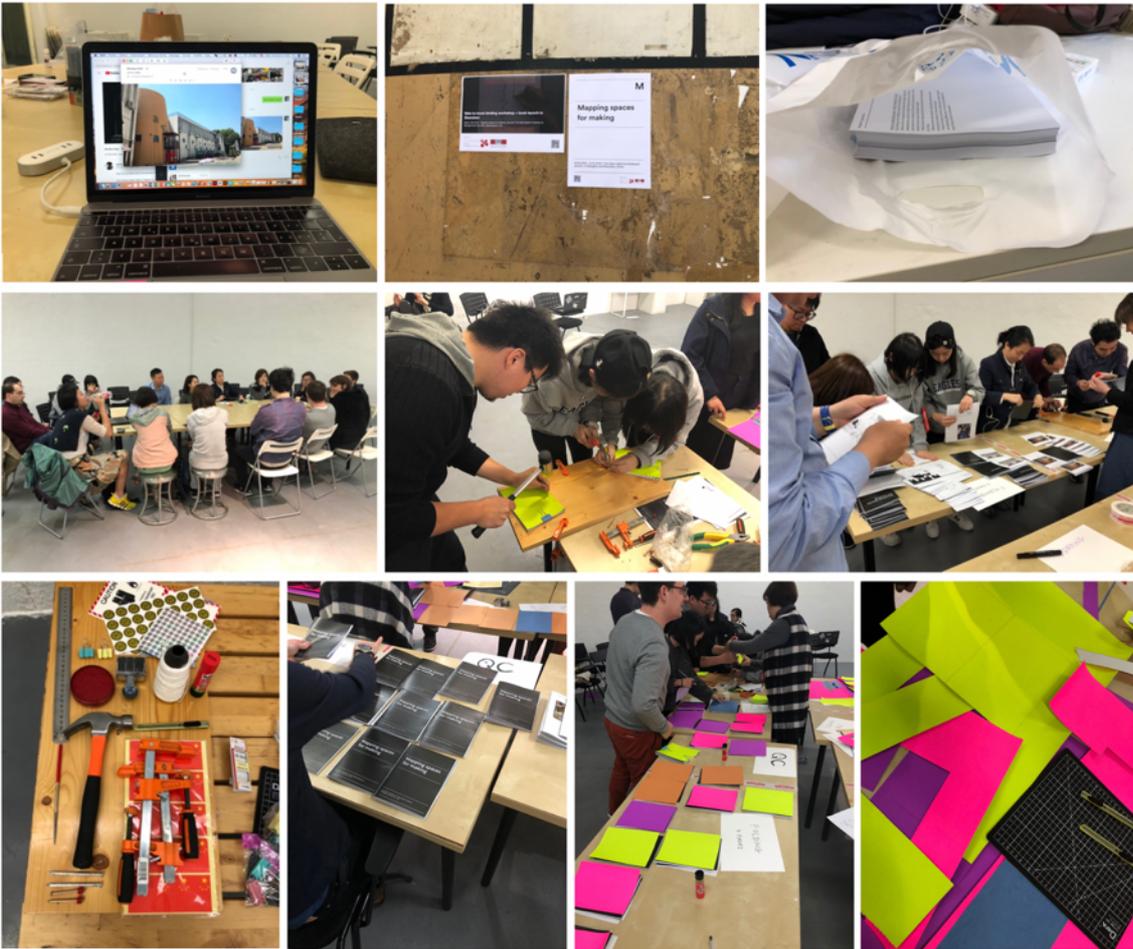
Redrawn based on Ramadier (2004)

In a multidisciplinary research, short-term multi-sited research can be conducted based on deeper local knowledge and past fieldwork of part of the team with tools from several specialties including: interviews, photography, drawing, mapping but also presentation of the project and of the specialties of the participants, doing activities together with local participants and creating shared document. This work also includes online conversations and the creation of small ephemeral WeChat groups / communities. Not only is the research made of participative observation and interviews, it is also innovative in the sense that multiple stakeholders have directly contributed to the research and that the research was diffused through their participation.

A first step to work with a participatory research approach is to define the idea of participation. Cornwall and Jewkes (1995) discuss the notion of participatory and participation in a research for finding a balanced approach in the context of health research: ““Participation” is rapidly becoming a catch-all concept, even a cliché [14]. ‘Participatory’ research methods can be used not only to enable local people to seek their own solutions according to their priorities, but also to secure funding, to co-opt local people into the agendas of others or to justify short-cut research within a top-down process” (Cornwall & Jewkes 1995: 1668). Nevertheless, in the context of makerspaces in China, there is no interest in “finding solutions” as Cornwall and Jewkes explain, but to share knowledge, confirm existing data and learn from the participants. The intentions of the researches, transparently shared, do not always bring the expected participation or participants to the proposed events. Participatory research allows participants to engage on several levels of the research process (Clark et al. 2009: 346), empower themselves by choosing their voice and influencing the research narrative in construction.



34. Workshop in Renens (May 2017) and in Shanghai (March 2018) © author



35. Workshop in Shenzhen (March 2018) © author

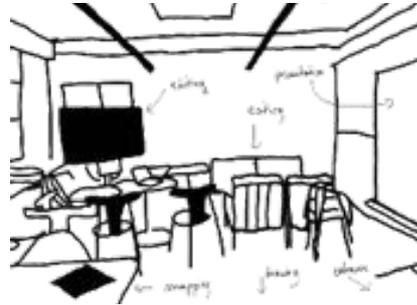


FIGURE 29:

Zine extracts - drawings by Anaïs Bloch
© Bloch, Protti, Bolli, Renaud (March 2018)

Source: zine, also available on mapmakers.space



36. Group production of zines from the public workshop in Shenzhen – each participant took one home (March 2018) © author

PEOPLE OF REFERENCE – BUILDING A NETWORK

People and communities – hobbyists, freelancers or entrepreneurs, share, learn and use technology. They like tinkering, making, hacking, improving, working with their hands and sharing information on the Web. They connect easily. Some people are especially influencing the culture. In order to better comprehend the dynamic of the maker movement, I established a list of references featuring makers, influencers, entrepreneurs, scholars, whose activities had an influence on present research. From the 103 people of reference, there are only 6 that I had no interaction with (interview, conference, discussion). Each of them is interconnected in some way. There are tensions in this type of networks, some elements are even disruptive because an informant may have had a negative experience, heard a rumor or is wary of others. It is occasionally hard to surpass these “misconnections”, but it becomes enriching with time when you connect better. Another interesting element with the network is the opportunity and ability to connect the dots. In my capacity of a researcher, the heterogeneity of people whom I met has allowed me to support projects and connect makers and non-makers expanding their opportunities.

	Name	Organization	Skills	Living in	Nationality	Age	Interaction	When?
1	Adam	NYU Shanghai	Professor / Teacher	USA	USA	40+	Meeting	9/18/2017
2	Adele	Xinchejian	Maker, Designer	Shanghai - China	France	18-30	Mini-interview	11/27/2017
3	Alex	Lab0	Maker, Freelance	Shenzhen - China	Russia	18-30	1 interview	9/27/2017
4	Alex	NYU	Professor / Teacher	USA	USA	40+	Meeting, Conference	9/19/2017
5	Alexey	Lab Zero	Maker, entrepreneur, biologist	Shenzhen - China	China	18-30	Meetings + wechat	.08.16, 27.09.17, 22.03.19
6	Amanda	InnoMaker+, Xinchejian	Manager	Shanghai - China	China	30-40	1 interview	9/15/2017
7	Anais	HEAD	Designer	Switzerland	Switzerland	30-40	workshops, meetings	several 2017, 18, 19
8	Andrea	Xinchejian	Maker, Freelance	Shanghai - China	Spain	18-30	Mini-interview	1/25/2018
9	Andy	Xinchejian	Maker, Freelance	Shanghai - China	Spain	18-30	Mini-interview	1/17/2018
10	Ankit	SZ makerfaire	Entrepreneur	India	India	18-30	Mini-interview	11/21/2017
11	Anna	Hacked Matter, NYU Shanghai	Professor / Teacher, Researcher	Shanghai - China	USA	40+	Meeting, Mini-interview	9/18/2017
12	Anonymous	entrepreneurs from BJ - budding	entrepreneurs in creative industries	China	China	40+	Meeting	9/22/2017
13	Anonymous	City of Beijing (urban development)	Expert	Beijing - China	China	40+	1 interview	11/7/2017
14	Anonymous	SZ makerfaire	N/A	Hong Kong -	Greece	30-40	Mini-interview	11/5/2017
15	Anonymous	urbanist Shenzhen	Urbanist, Architect	Shenzhen - China	China	18-30	Lunch, 1 interview	8/12/2016
16	Ben	SingularityNet, IcoG Labs	Entrepreneur, coder	Hong Kong -	USA	40+	Meeting	9/15/2019
17	Berlina	DFRobots, Seedstudio, Code	Freelance, Artist	Shanghai - China	China	18-30	Meeting Clément	N/A
18	Bin	Culture and Urban Development	Professor / Teacher, Researcher	Beijing - China	China	30-40	Conference, Meeting, Mini-interview	07.08.19 + 22.09.17
19	Bo	Edu + 3d printing company	Teacher / Entrepreneur	Beijing - China	China	40+	Meeting	9/11/2017
20	Bunnie	N/A	Maker, Entrepreneur	Shenzhen - China	USA	40+	None	N/A
21	César	Makerbay	Maker, Entrepreneur, Researcher	Hong Kong	French, Japanese	30-40	Meetings 2016 / 2019	3/19/2019
22	Chenchen	Swiss Embassy	Expert	Beijing - China	China		Meetings	7/20/2016
23	Chenxi	Urbanist Beijing / former Swiss	Architect, Urbanist	Beijing - China	China	40+	1 interview	7/19/2016
24	Chris	Xinchejian, Chinaccelerator	Community / space manager	Shanghai - China	China	18-30	Meetings	several 2016, 2017
25	Clément	Xinchejian, EPFL	Maker, researcher	France	France	30-40	SNF Project	several 2017, 18, 19
26	Dale	fab12, Make Magazine	Maker, entrepreneur	USA	USA	40+	Conference	8/12/2016
27	Danny	xinfab	designer	Shanghai - China	Netherlands	18-30	Interview	4/6/2019
28	David	SZOIL, Maker Collider, Xinchejian	Politician / politics, Entrepreneur	Shanghai - China	Taiwan	40+	Conference, 1 interview	12.08. 2016, 19.09.2017
29	Dessie	icogLabs	Student / coder	Ethiopia	Ethiopia	18-30	Conference, Meeting	6/5/2018
30	Duncan	HAX	other	Shenzhen - China	USA	30-40	Conference	8/12/2016
31	Eliot	CUHK / NYU Shanghai	Expert, Professor / Teacher	Shanghai - China	USA	30-40	1 interview, Meeting	7/22/2016
32	Emanuele	Politecnico di Torino	Architect	Italy	Italy	18-30	workshop	several 2017, 18, 19
33	Emmanuelle	Swiss Center Shanghai	Manager	Shanghai - China	Switzerland	30-40	Meetings	6/23/2019
34	Enrique	Beijing makerspace	Maker	Beijing - China	Mexico	18-30	1 interview	12/7/2017
35	Eric	Seedstudio, Chaihuo, x.factor	Entrepreneur, Maker	Shenzhen - China	China	30-40	Conference	8/12/2016
36	Florence	EPFL	Researcher, Anthropologist	Switzerland	Switzerland	40+	SNF Project + supervision	several 2016, 17, 18, 19
37	Freda	Xinchejian	Community / space manager, designer	Shanghai - China	China	18-30	Mini-interview	12/12/2017
38	Frédéric	Coderbunker, Agora Space	Entrepreneur	Shanghai - China	France	40+	1 interview, Meeting	13.09.2016, 02.03.2018
39	Getahun	Ministry of Science and Technology	Politician / politics	Ethiopia	Ethiopia	40+	Meeting, Mini-interview	2/16/2018
40	Getnet	SingularityNet, IcoG Labs	Entrepreneur	Ethiopia	Ethiopia	30-40	Meeting, Mini-interview	2/16/2018
41	Hannah	Development Reimagined (China)	Entrepreneur, Expert	Beijing - China	UK / Kenya	40+	Meeting, Mini-interview	11/6/2017
42	Henry	Curtin University, WHC17	Researcher, Professor / Teacher	Australia	CN / Australia	30-40	Conference	8/7/2019
43	Ivan	Xinchejian	Maker, Freelance	Shanghai - China	Russia	18-30	Mini-interview	1/18/2018
44	Jack	NYU Shanghai, Shanghai Library	Maker, Student	China	China	18-30	Mini-interview	several 2017, 12.12.2017
45	Jade	Xinfab	Community / space manager	Shanghai - China	Brasil	18-30	2 interviews	22.11.2017, 02.02.2018
46	James	Xinchejian	Maker	Shanghai - China	South Korea	18-30	Mini-interview	12/5/2017
47	Jane	HAX	Community / space manager	Shenzhen - China	China	18-30	Meeting	11/14/2017
48	Jason	Future+, Biennale HK SZ	Researcher, Architect	Hong Kong -	USA	40+	Meeting	26.09.17, 07.03.18
49	Jie	Shenzhen Municipality	Politician / politics	Shenzhen - China	China	30-40	Conference	8/12/2016
50	Jing	Luohu Social Innovation Space	Community / space manager	Shenzhen - China	China	18-30	1 interview	8/8/2016
51	Jing	MIT	Professor / researcher	Shenzhen - China	N/A		None	N/A
52	Jo	Q-space	Maker, Artist, Community / space manager	Beijing - China	UK, Malaysia	18-30	Meeting, Mini-interview	9/21/2017

FIGURE 30:

List of people of reference, informants for the research (part 1) (as of 15.10.19) (October 2019)

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Extract from the list of people of reference

53	John Jiang	Xinchejian	other	Shanghai - China	China	30-40	1 interview	4/5/2019
54	Julian	xinchejian	maker, freelance	Shanghai - China	China	18-30	Meetings	4/5/2019
55	Jürg	N/A	Filmmaker	Switzerland	Switzerland	40+	Meeting	juin-16
56	Justin	Beijing makerspace	Maker,Entrepreneur	Beijing - China	China	30-40	Meeting	6/2/2014
57	Kevin	Xinchejian,Barcamp	Maker,Entrepreneur	Shanghai - China	USA	30-40	1 interview	10/31/2017
58	Kin	xinchejian vinci hub	maker, entrepreneur, IT	Guangdong - China	China	18-30	Meeting + wechat	several 2017
59	Laurent	French Entrepreneur	entrepreneur	Shenzhen - China	France	30-40	Meeting	3/10/2017
60	Leyis	Xinchejian	Maker	Shanghai - China	China	18-30	Mini-interview	11/25/2017
61	Liao	Litchee Lab	Maker / entrepreneur	Shenzhen - China	China	30-40	Mini-interview,Meeting	11.08.16, 04.03.19
62	Liz	UCL,British Council	Researcher	UK	USA	18-30	1 interview	11.08.16, 21.11.16
63	Lucio	Xinchejian,Xinfab	Maker,Entrepreneur	Portugal,Shanghai	Brasil	30-40	None	N/A
64	Maciej	xinchejian	maker, freelance, entrepreneur	Shanghai - China	USA	30-40	Meeting	several 2017
65	Marc	EPFL, CHIC	Researcher, Economist	Switzerland	Switzerland	40+	SNF Project	several 2016, 17, 18, 19
66	Mary Ann	Shenzhen Anthropologist	Expert,Researcher	Shenzhen - China	USA	40+	1 interview,Lunch,Meetir	7/27/2016
67	Meklit	IcogLabs	Community / space manager	Ethiopia	Ethiopia	18-30	Meeting	2/16/2018
68	Michael	Curtin University	Professor / Teacher,Researcher	Australia	Australia	40+	Meeting	several 03.2017
69	Michelle	DimSumLabs,PolyUDesign	Maker,Researcher	Hong Kong	HK, Canada	30-40	Conference,Meeting	3/10/2018
70	Min	Xinchejian	N/A	Taiwan	Taiwan	30-40	None	N/A
71	Mitch	Xinchejian,Q-space	Maker,Entrepreneur	USA	USA	40+	Meeting,Conference	10/27/2017
72	Nael	SZOL,SingularityNet	Maker,Student	Beijing - China	Ethiopia	18-30	Meetings,1 interview	11/7/2017
73	Neil	fab12,fablabs,MIT	Professor / Teacher	USA	USA	40+	Conference	8/9/2016
74	Neville	Mars Architects	Architect	Shanghai - China	N/A	40+	Meeting	3/1/2018
75	Pascal	swissnex China	Politician / politics	Shanghai - China, -	Switzerland	40+	Meeting	several 2016
76	Paul	SZ makerfaire	Maker	Australia	Australia	40+	Mini-interview,Meeting	43056
77	Paul	Frog,Xinchejian	Maker	Shanghai - China	UK	30-40	1 interview	42986
78	Peter	fab12	Researcher,Professor / Teacher	Netherlands	Switzerland	40+	Meeting	10.08.16, 18.05.2017
79	Phoebe	N/A	other	Shenzhen - China	China	30-40	Lunch	juil.-16
80	Punawan	SZ makerfaire	Student	Thailand	Thailand	18-30	Mini-interview	11/5/2017
81	Qiong	Coderbunker	Maker,Community / space manager	Shanghai - China	China	18-30	1 interview	3/2/2018
82	Ricky	Xinchejian,Coderbunker	Maker,Entrepreneur	Shanghai - China	Canada	30-40	Lunch	06.09.16, 11.09.2018
83	Ricky	Mushroom Cloud,DFRobots	Entrepreneur	China	China	40+	None	N/A
84	Rockets	Mushroom Cloud,DFRobots	Entrepreneur, maker	Shanghai - China	China	30-40	2 interviews	19.09.17, 01.03.18
85	Roger	Xinchejian	Maker,Entrepreneur	Shanghai - China	US Chinese	30-40	1 interview	10/13/2017
86	Rosie	Hutong NGO	Student	Beijing - China	USA	18-30	1 interview	8/17/2016
87	Samantha	UNDP urban development Cf	Expert	Beijing - China	USA	40+	1 interview	8/19/2016
88	Saverio	Fablab O	Community / space manager	Shanghai - China	Italy	18-30	1 interview	3/2/2018
89	Sébastien	Fablab Beijing	Maker,Community / space manager	Beijing - China	France	40+	1 interview,Meeting	21.09.2017, 07.11.17
90	Séverine	Swiss Embassy	Politician / politics	Kenya	Switzerland	40+	Meeting	1/12/2018
91	SH	Shanghai Library	Library manager	Shanghai - China	China	30-40	1 interview	9/10/2017
92	Shanshan	Xinchejian,Shanghai Library,"Science and Technology Assoc		Shanghai - China	China	18-30	2 interviews	10.09.17, 19.10.2017
93	Shirley	fab12,SIDA	Politician / politics	Shenzhen - China	China	30-40	Conference	8/9/2016
94	Silvia	Xinchejian, Michigan University	Researcher,Maker,Expert,Professor	USA	USA,Austria	30-40	e-mails	5/26/2018
95	Stephanie	White House maker mvmt	Politician / politics	USA	USA	30-40	Conference,Meeting	8/12/2016
96	Tomas	fab12,fabfoundation,fabcity	Maker,Politician / politics	Spain	Spain	30-40	Conference	8/10/2016
97	Trude	Q-space,Kent university	Researcher,Maker	China / UK	N/A	30-40	wechat	17.08.16, 03.09.17
98	Vicky	SZOL	Community, communication manager	Shenzhen - China	China	18-30	Meeting,1 interview	9/27/2017
99	Violet	x.factory	Community / space manager	Shenzhen - China	China	18-30	Meeting,1 interview	7/28/2017
100	Vivien	fab12	Maker, researcher	France	France	30-40	Meeting	5/18/2017
101	Wen	Shenzhen + Curtin	Researcher,Professor / Teacher	Shenzhen - China	China	30-40	Meeting	9/27/2017
102	Yip	SZ makerfaire	Student,Maker	Malaysia	Malaysia	18-30	Mini-interview	11/21/2017
103	Yiping	fab12, Innovation Dem. Zone	Politician / politics	Shenzhen - China	China	30-40	Conference	8/12/2016

FIGURE 31:

List of people of reference, informants for the research (part 2) (as of 15.10.19) (October 2019)

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Extract from the list of people of reference

SELVES IN TRANSITION / LIMINALITY

People are at the heart of the makerspaces, they are designers of their environment, projects and lives. They are the actors of their path and often use technology to augment their abilities. The makers show that the world is open and can be connected through projects and interests. The paths of the makers are fascinating for their liminal aspects. Identity is redefined, communities are shaped and paths change.

Theories and research around identities show that the dynamics of social constructions generate permanent changes in identity. The global circulation of knowledge in the maker culture forges identities with local and global aspects. According to Tomlinson, a British specialist on the cultural aspects of the globalization process, globalization creates, rather than destroys identities (Tomlinson 2003: 271). Bauman adds that the identity quest is a "secondary effect" generated by the combination of pressures from individualization and globalization "the quandary tormenting men and women at the turn of the century is not so much how to obtain the identities of their choices and how to have them recognized by people around - but which identity to choose and how to keep alert and vigilant so that another choice could be made in case the previously chosen identity has been withdrawn from the market or stripped of its seductive power" (Bauman 2002: 483).

Maker identities

In the global maker culture, identity is linked to multiculturalism with a transversal connection between groups of makers, nationalities, interests etc. People do usually not describe themselves as a maker but rather by what they do or which training they have (engineers, designers, dreamers). Identities are multifaceted and evolve according to the project running or the skills a person has. A maker is part of a group and at the same time self-defined. In the Chinese context, makers are more than hardware enthusiasts or geeks. They can for example be creators, inventors or entrepreneurs. The culture of making emphasizes the power of community social empowerment and shared experimentation. The makers are tinkerers or maybe engineers, prototypers and more but not necessarily experts. This is nevertheless shifting with the move towards professional makers or maker pro, and the platformization happening in Shenzhen with x. factory and SZOIL. The three types of makers: hobbyist, maker pro and entrepreneur are categories which can be mixed, and in which a maker can recognize herself/himself all together. Anderson defines the maker as an industrial artisan (Anderson 2012: 67), and Davies explains the following:

Hacker spirit involved making things, doing things, understanding the world around you, tweaking aspects of that world to fit you, creativity, learning by doing, and a commitment to sharing knowledge and to community. Hacking was a mindset, one that involved self-reliance, a curious spirit and being active rather than passive. It was about claiming agency over the material world and the circumstances around you and, having done so, supporting other people in doing the same. A hacker as a particular attitude, a resistance to the mainstream, rather than any particular relationship to specific technologies (Davies 2017: 142).

Hacking is a mindset. It pushes to actively start projects, and persevere despite failing. Nevertheless, in China, the makers observed and interviewed usually joined makerspaces or maker events because of their particular relationship or interest to specific technologies. They may be resisting pressures from the society and family to follow a given lifepath but not always.

What all makers share, is an attraction for self-accomplishment or self-making. Doing is of great value. The “homo faber” (Lallement 2015) resuscitated by hobby, the craftsman turned “outward” by craftwork, where the “value of experience [is] understood as craft” (Sennett 2009: 288), the “people who regard technology as an invitation to explore and experiment of, with the most inclusive possible definition of technology, meaning any skill or technique that we learn and employ” (Dougherty & Conrad 2016: XV), or as cited by Wang: the ones “devoted to innovation passionately” and “who control the production tools themselves” (Yu & Deng 2015: 46), or the ones who are going to realize the collective dream of the Chinese nation (see Chapter 5). The idiosyncrasy of people and makerspaces with different goals

People in transition – making people

Makers are people in transition in their lives, they are building themselves up or refining their knowledge. They do sometimes not fit in the market due to their non-traditional independent work interests. They may be part of a makerspace for a while and will then or pursue their personal project further (Andrea, Freda etc.), quit (Mei Ling), open their own space or company (Ricky, Rockets, Amanda), or launch wider projects (Nael, Hip) and more (David Li, Eric Pan). As Hatch, American entrepreneur and “innovation revolutionary”, writes in his manifesto:

Embrace the change that will naturally occur as you go through your maker journey. Since making is fundamental to what it means to be human, you will become a more complete version of you as you make.

Whenever one joins a movement, one changes. This is a good change. Embrace it. Participating in the Maker Movement is a personal journey. Each will look different. No two makers are exactly the same. No two paths will be the same. But you will change. You will begin to see the world through the eyes of someone who participates in creating. [. . .]. Join me, join us, join the movement—it will help you become you” (Hatch 2013: 31).

Makers embrace changes. Rockets, the co-founder, of Mushroom Cloud makerspace, in his mid-thirties, explains his path from being a government employee of China, to joining XinCheJian (2010-2011) and finally being hired by DF Robots (2012-2013). Opening Mushroom Cloud and being a voice for the space happens with the support of DF Robots.

Rockets: yeah, first I have seen the 3-D printer first in XinCheJian, I was really impressed. Because at that time I was making a robot with some friends. You know making a robot was really difficult for us at that time. It was very difficult because there was not a lot of things given so we had to build everything by ourselves. The [Computer Numerical Control] CNC was expensive. If we ask them to make something for us, it was expensive and slow. So, when I

saw the 3d printer, I thought: Oh, that is really impressive because it can make components, mechanical things, structural parts of the robot. The first time, they just printed a mushroom in Mario, the game, they have a mushroom that makes me crazy. Waow! they can make these things, so they can make mechanical things, joints, so we can make a robot really quickly. So, I was very attracted to that and in that time, I joined DF robots because Ricky [Ye] asked me to join. At that time, I was very disappointed about my job. My job was environment protection and design water treatment plans but you know, you had to negotiate with the government department so sometimes you had to do some dirty things and the companies we did the service for, they only cared about the reports. They said, hey we passed the examination, we passed the report – everything is fine, thank you! Then when we go back and check the work / the plans, they stopped it. [...] they took the money to build that, match the requirements. I find it's very ridiculous. So, I was very sad or disappointed about it. Ricky, the CEO of DF Robot, told me to join DF Robot.

[...]

R: Ricky Ye is the CEO of DF Robot, you will know that in XinCheJian we have 2 Ricky, 1 Rockets, 1 David and 1 Mei Ling. The first 3 were Ricky, Mei Ling and David. Then, Ricky Ye, me and the rest of them. I don't know how to say that, we are stakeholders [...] we got together and paid the rent of XinCheJian. So, David said... we will never pay the membership for that (laughing) So that's why we are also called co-founders.

[...] So, I quit my environmental protection engineer job and joined DF robots. I was interested in 3d printing so we copied the "ultimaker", the 1st generation and make one for ourselves. So, we made one to make our robots, then a lot of friends were coming and saying, wow, that's a good machine, do you have more? I need one! So, we just build one and sold to them, and then friends of friends were coming. So maybe we can make one for them. Ultimaker is open source, so we make one. Then we find maybe we have to do some more special one, so we start to design a data printer (Interview Rockets, co-founder of Mushroom Cloud and former XinCheJian member, September 2017).

Andrea started joining XinCheJian after her husband became member. She got so enthusiastic and passionate about creating her project that she left her job as an engineer in industrial to become a freelancer and continue building up her own company.

I arrived 2 and a half years ago to Shanghai to establish a [outdoor retailer] OR office for a car components manufacturer. My husband was spending most of his time in the first hacker space of China while he was trying to find a job opportunity. Then the community was very engaging and I met my current business partner Adele. Together, with some more people, started to build the Precious Plastic machines to recycle plastic locally in a small scale. One year after decided to set up our own company called Melting Point to answer the sustainability market need a for business as well as create curriculum for educational centers (Interview Andrea, XinCheJian member, January 2018).

Adele, her current business partner, explains how she found the community. She has a steady job and works on the company and project built up with Andrea.

I knew about this hacker space since 2014 but to meet it sounds like a very geeky space full of men and the first time, I enter the space I remember that the room smell like an "old bachelors"

bedroom. I've always been building stuff on my own, once I graduated and start to work, I felt the need to develop a side project on my own. In May 2016 I saw a video on Facebook about a DIY plastic recycling workshop and I decided to implement it and XinCheJian was the best place to do such a project. So afterwork, I drop by to check what machines was available and the day after I came at the open night to present the project and build a team. (Interview Adele, XinCheJian member, November 2017).

Alex came to Shenzhen because he is a software engineer and was working in Russia but wanted to get closer to hardware engineering. He therefore moved to Shenzhen and is co-manager of Lab X. Freda, the former space manager of XinCheJian, an artist, came to XinCheJian where she could make her dream come true and develop her project thanks to the shared tools and skills. Andy, visited a friend in Shanghai and after discovering XinCheJian decided to stay there. He had just finished his studies and wanted to use the freedom to try in developing his own projects around urban farming while taking a few package designing mandates. Leyis came from Hangzhou to learn Helicopter flying and then stayed in Shanghai to join the helicopter simulator team led by Kin, the creator of the project. James finished his studies in Shanghai and is working on his projects before finding a serious job in the industry. Lives of people change, Jade, community manager of XinFab, explained the feeling of empowerment linked to the learning and sharing in the space. Despite the challenges of maintaining a space and a community, the skills learned have changed her. When I met her the second time, she was going to leave Shanghai for a new adventure after almost a year at XinFab. "it is a place where people can empower themselves – not accessible to everyone, you need to have free time and interest but not everyone can access even if membership is cheap" (Interview Jade, XinFab manager, March 2018).

At the same time as their projects and lifepaths brought them to these spaces, they have, in between, moved on in a way or another. Spaces have closed, people have left, others have gone deeper in their projects and so on. David Li, from co-founding XinCheJian, has later co-founded Maker Collider, and later SZOIL in Shenzhen. He is considered as a reference and the face of the international maker movement in China. Eric Pan, the hardware business man, co-founder of Sseed Studio, Chaihuo makerspace and x.factory leads its experiments successfully. Ricky, co-founder of XinCheJian, has opened his own freelance community in Shanghai and now in Singapore. Paul who learned all his technical skills at XinCheJian has become a prototyper at Frog and now moved further on to Singapore. Nael, a former intern of SZOIL has built a competition and training opportunity for students between Addis Ababa and Shenzhen with the support of both local communities and Ethiopian government. Sébastien, in Beijing, who was tired of working for a private company as an engineer and after meeting the head of an art school who was open to the idea of having Fab Lab ateliers, resigned his job and opened his space trying to bring it to a sustainable level where in 2017, educative workshops, were the main activities, trying also to become a labeled Fab Lab. Jason Wang, the founder of Beijing makerspace, who left it after the governmental initiatives to become an entrepreneur with new successful projects. Mei-Ling, the co-founder of XinCheJian, has also left the maker culture and China. Kevin, former legal representative of XinCheJian is fully involved in his start-up, now a company in Shanghai.

Shanshan was a member of XinCheJian and had started the project “make for kids” before starting working with the local government to found her NPO. Amanda, after being the space manager of XinCheJian has opened her own space with a company, which has in between already changed again:

[After leaving in Germany] I missed Shanghai too so I decided to come back. I started my own business as a consultant because during my studies and also my time in Germany – I met many people in small companies. They were very curious in China, and would like to make business with China if they would have the opportunity. Sol was talking to them to establish contact and because my background was language, I was talking to some law firms to do orientation trainings for foreign employees coming to Shanghai. But I got bored of it quickly because it's an easy job, not very exciting.

After 3 years, I thought I might need to take a break and just relax, see what I want to do next. I hang out with some friends and they told me there was this cool place you have to go, there was this hackathon happening at XinCheJian and this friend told me it's super cool with a bunch of geeky people working on electronic stuff and things I don't understand. So, I thought ok I can go. So, I went, It was the first hackathon in my life, when I saw what people were doing. It was so much fun. During the whole process, people learn how to do and make something. It is interesting and exciting. It feels like something I really would like to do, it's fun! So, I joined XinCheJian as a member. But I'm also a bit impulsive and hate when things are lying around or messy, it drives me crazy. But after a couple of days, I was working on my own project, there were always people leaving things on the table, things were laying around, I don't know where to find it. So, I started having things sorted out. That was 2013. Paul and David, the co-founders of XinCheJian were still there and they were very happy someone was helping out. They had full-time jobs and they were not able to be at XinCheJian to be all the time so they asked me if I wanted to be a staff member, help us to run the space. Of course, it was all voluntary, there was no payment. I thought why not, I might spend a lot of time here. So, I started helping, recruiting new members, organizing new events and activities. That's how I got involved.

M: You were also in charge of building up the community, how did you do that?

A: I think for many people, they think building up a community is very easy, you just do things and other people will come to you. In 2013 and 14, because that was very new, but also you need to let the word out, you need to let the people outside know that you are doing this kind of activities It's also very educational and inspiring as well. More people should be involved. I don't know, it's maybe also because of my personality, I like to talk to people and I get to be friends with them very quickly. Many of the people became members, they spent some time there, learning stuff or even help me out. That's how it got bigger and bigger.

I think in 2014 – of course XinCheJian became more active and well-known – also recognized by the community – in 2014, the government gave a strong push to the maker movement, the central government. Everybody, the whole society was curious about what is a maker? The government, the civilians, everybody, also schools, universities and all the kind of companies, organizations – it was like maker was a newly created word, I never heard, so curious. Then they organized these tours to visit XinCheJian. When people search makerspace or hackerspace on the website, it's usually XinCheJian or Chaihuo because we were the most active. I also think that XinCheJian is the least commercial and that's why people like it, there is no conflict of interest inside. Some other makerspaces came up later, or were setup in response to the government's call, they were setup with a very strong purpose, they were organized / run differently. I have a very strong... I'm emotionally attached to XinCheJian, in my mind XinCheJian is the one place in China if you want to do something without this intention of making a lot of money out of it.

[...] yes, it has changed my life. I will always be very grateful to XinCheJian people. (Interview Amanda, former member of XinCheJian, Innomaker+ manager, September 2017)

In Amanda's story, XinCheJian, her flexibility and visionary thinking have reshaped her lifepath. In general, makerspaces, are liminal places and spaces institutionalized and legitimized through rites and ritual moments (Bourdieu 1982: 58), where people can work on their skills or their lives before taking the next step. People do not describe themselves as makers or part of the maker movement, they actually rarely even know this concept of the maker culture or movement. The emic²⁹ and etic³⁰ perspectives are in tension. According to the etically called makers, they simply are engineers, freelancers, designers, students, artists or curious persons who found a place where they could work on their projects, create new projects with others and share time and space without thinking of the wider ideal. There is a need in research to define them in order to understand their differences and commonalities.

Mostly, the experience of the makerspace or the movement around making has changed people's lifepaths. The transformative process does not change the self-definition, which continuously is linked to one's training (designer, engineer, artist). Makers in China are diverse – they are Chinese and international, and gender mixed.

CONCLUSION

Conducting a piece of research with all its various elements, opportunities and failures also raises challenges. These challenges produce sometimes difficult moments, but sometimes treasures too characterizing the heuristic approach of fieldwork. The maker culture is a world of change, and makerspaces are part of the structures of change which exist to offer an alternative to the existing choice, allowing a transition but not guaranteeing its existence in the long term. The spaces themselves can evolve depending on the communities but also on governmental incentives, corporate interests, cities and more. They are structures of change and of empowerment, but also business opportunities or innovative communities. Due to its multiplicity of forms and of interests, building the story research has been a positive challenge. As Kubitschko and al. write, grasping the maker/hacker culture is hard as it is not simply one entity:

The popularization (that often reaches a vulgarizing dimension) makes it even more critical to investigate and analyze concrete settings and specific activities to gain better understandings of the plethora of motives, aims and means that fuel hacker cultures. Conceptualizing hacker cultures in the singular bears the risk of annulling both context and temporality. There simply is no unified hacker movement, and there might not even be clearly distinguishable hacker

²⁹ Research with a focus from the perspective of the subject / researched social group

³⁰ Research with a focus from the perspective of the observer / the outsider

generations. Fleshing out specificity is of great importance when you empirically investigate the political dimensions and possible societal consequences of hacking. This approach has, of course, methodological consequences. (Kubitschko 2017 : 185)

As mentioned in Chapter 3, there are few references and working groups researching similar topics to makerspaces in China as it is often considered “has been” but actually nobody has in fact been looking more carefully at what happened after the government’s interest ceased, at the platformization of makers and at its outgoing impact by becoming a welcoming hub for makers in the world. In order to discuss the fieldwork in an academic context, it is necessary to gather multiple sources from different fields such as cultural anthropology, media and communication studies, political studies, technology studies and urban development. The directions given by the diverse fields have shaped the thesis structure into different chapters exploring and discussing the facets of the topic, and at the same time building up on each other in the discussion.

This is where this research contributes to the trace of the makerspaces in China. The maker culture is fading in China but continues stronger in other countries where the narrative and empowerment of manual work needs to be worked on and where makers can strongly benefit from these skills. Bringing together a fast-changing urban China phenomenon, and theoretical inputs from various academic sources, contributes to strengthen the discussion on elements that are hard to define.

In addition, these fast changes also have an impact on research. People take new steps in their lives, move away, the space can disappear for financial reasons or change in policies, be reintegrated in another place, and renamed. China’s makerspaces are unique in the way the global movement is shaped by an ecosystem of fast-prototyping, access to tools, talented people, pragmatism and willingness of trying things out. Makerspaces operate on the boundaries of science and its popularization. Therefore, the wide array of academic literatures and fairly popular academic works are representative of this tension.

The topic of makerspaces in China is a great opportunity to conduct anthropological and experimental fieldwork in a modern and changing environment, as well as to study China from a non-classical perspective with an intellectual and hands-on approach.

历史性, 创客文化和叙事

Lishi xing, chuang ke wenhua he xushi

Makerspaces, cultures and movements have called for attention in the last 10 years. In China, this countercultural movement, which appeared in 2010/11 became a governmental initiative in 2015. Makerspaces can be considered as ephemeral structures of change. The strength of its topic lies in its contradiction and nuances where any kind of space with a group of people and a will to do things with their hands can fit this identity. There is a strong enthusiastic engagement of participants in the maker cultures. This chapter seeks to answer the following questions: How can we define the maker movement or culture? Is it resisting the processes of production or rather participating in them? What explains this enthusiasm?

In the context of the empowering access to the Internet and the circular economy (Hobson & Lynch 2016: 17), there is a movement towards experimentation with new work spaces where people can also express their own creativity and wishes, with flexibility, and self-determination, surrounded by people with similar interest. It contains some paradox in the rethinking of the workspace, autonomy, hierarchies and consumption, and at the same time fits into the system by creating a new niche between large companies and individuals. The maker movement is creating new ways of working in China. The spaces find themselves between the transformation of processes of production and social change. At the same time, they are inscribed in a Chinese tradition of experimentation as Heilmann, the German political scientist and sinologist, founder of the Mercator Institute for China Studies (MERICS), writes from “the Chinese Communists’ revolutionary experiences”, to the “non-Communist intellectual context and administrative practices”, to the core features of China’s contemporary policy process”, all are based on experimental practices (Heilmann 2008a: 3–4). The new forms of collaboration researched here are, as well, more like experiments with sometimes the opportunity to take risks, bring changes and potentially innovate. China’s expression of the maker movement combined with the governmental initiatives takes a particular shape in the narratives and makerspaces. Therefore, does the Chinese government instrumentalize the maker movement in order to boost the economy? Does an elite emerge from the co-optation of the makerspaces? All cities have all types of makerspaces; nevertheless, some specificities are shown and which also reflect local policies.

Chapter 4 will first discuss the global and Chinese maker culture, introduce the ideas of resistance to consumption (with an introduction and reflection on the Arts & Crafts movement), present Chuangke – the maker culture with Chinese characteristics, discuss its accessibility and return to the heart of the maker culture – its people and projects. It also aims at presenting an alternative narrative to the generally accepted and romanticized perception of revolutionary makers.

MAKER CULTURE

Global maker cultures

In the last year, there has been a tremendous proliferation of numerous types of makerspaces, hackerspaces, Fab Labs, co-working spaces, accelerators and incubators source. All these types of organizations bring alternatives to well established companies generating new dynamics. Not only to they bring a new idea of the structure of work and hobby, they do also blur the lines between professional and private activities. Dual categories such as public/private, individual/collective and offline online, are to be rethought as they, in general, are limited by their boundaries and not representing the hybrid liminal spaces of making. Makerspaces are spaces where all kind of profiles are mixed, languages, skills, objectives. Manual work is not new but this enthusiastic tech, DIY, making, tinkering enthusiasm is there. According to Smith, Professor of Technology and Society in the United Kingdom, globally, each makerspace is part of the process of democratizing innovation and is: “[a] site of struggle over profound issues material to social futures, and hence an example of innovation democracy in action.” (Smith 2017: 14) Drone evenings, robot competitions, plastic recycling, watch making, lamps for kids, cup printing, silk screening, painting, urban farming, prototyping for mandates or for one’s own project are part of the projects of makerspaces in China and more specifically in Shanghai. There is a diversification in terms of smaller spaces, which are part of the fabric of the city, and at the same time out of its practices. Their survival is often endangered as the non-profit business models are at risk in terms of sustainability. Maintaining a community and a minimal financial stability are both the main challenges of makerspaces. These collaborative spaces, combining individualistic projects and shared projects, in a non-hierarchical collective organization, are also the ones enabling innovation first on a local and potentially if successful, on an international level. In general, the non-hierarchical position of these places allows each member to be its own boss and remain independent at the same time as being part of an infrastructure where she/he can contribute to its development, learn from and be inspired by the others. The autonomy purposefully generated and enables to choose what to learn, how and when.

In a complex and uncertain economy, the processes of creativity and innovation have become increasingly more heterogeneous, distributed and pervasive. The exploration of new ideas and the development of innovative products and services take place in a context in which the social aspect plays a key role. Innovation processes often take place outside conventional structures of research laboratories or research and development (R&D) departments in organizations. The literature on open innovation has highlighted the value of collective innovation processes involving the participation of actors outside organizations, particularly localized innovation communities. (Capdevila 2017: 80).

Open Innovation as mentioned above by Chesbrough, an American professor, organizational theorist, is an “antithesis of the traditional vertical integration model in which internal innovation activities lead to internally developed products and services that are distributed by the firm” (Chesbrough 2017: 35). Even if he mainly concentrates on the innovation capacities and strategies of companies, the concept has brought an opening and a recognized permeability of enterprises and of what innovation means with a more dynamic approach:

This is the future of open innovation—a future that will be more extensive, more collaborative, and more engaged with a wider variety of participants. It will extend beyond technology to business models, and it will embrace both product and services innovation. Just as no man is an island, no firm that restricts itself to the confines of its own R&D lab will be successful in an open innovation world. As one R&D manager observed to me, “Before open innovation, the lab was our world. With open innovation, the world has now become our lab” (Chesbrough 2017: 38).

Von Hippel, a professor in Technological innovation at the Sloan School of Management, MIT, notices the dynamic linked to the technological changes allowing individuals and companies to develop their products and services as well as sharing them easily, creating “user-innovation communities” with a rich knowledge (Von Hippel 2006). These understandings of innovation are part of the era of redefining structures and ways in which knowledge is shared. Makers are at the bottom of this pyramid. The professional and entrepreneurial is not a must for developing skills, learning, innovating. As Troxler and Maxigas call this enthusiastic proliferation of hobbyists and commercial spaces, the “hackerdom” or the “shared machine shops” (Troxler & Maxigas 2014) “the autonomous micro-communities”(Moilanen 2012: 94), hacker and makerspaces are now part of game and a wide concept including several types of spaces, communities, ideals, geographical regions, personalities, projects and objectives.

There is a romanticizing development or revival of manual work with a growing interest for new technologies that lead to this self-empowering culture with a great support coming from the widespread use of the Internet. As Dale Dougherty, who founded Makezine in the USA in 2005 writes, the context allows to spread the culture even if still rather small, while people and projects are at its heart:

“Energized by the Internet and increasingly affordable technologies for design and production, the maker community has grown to include more than just its technical members. It has become a participatory movement for creating a future that, to paraphrase William Gibson, is here now but not yet widely distributed. Thus, the Maker Movement is not about the technology itself, but about people and their projects that apply technology in new ways” (Dougherty & Conrad 2016: XIX).

The maker movement has evolved in multiple forms with different names and ways and it still characterizes a change of thinking, a hands-on approach to creation and a new economic pathway. In addition to the movement, languages and cultures add to the lostness in translation. Places are defined, spaces created and events organized to share, show, learn and develop projects and produce objects. This form of making has an impact on manufacturing, education, government and public policy, citizen science and retail (Deloitte Center and Maker Media 2014). According to Farr in Moilanen³¹, there are three waves in hackerspace history (Moilanen 2012), to which the author added Chinese and global momentums.

³¹ The original contribution is not available anymore online. Moilanen is therefore the reference of Farr’s work.

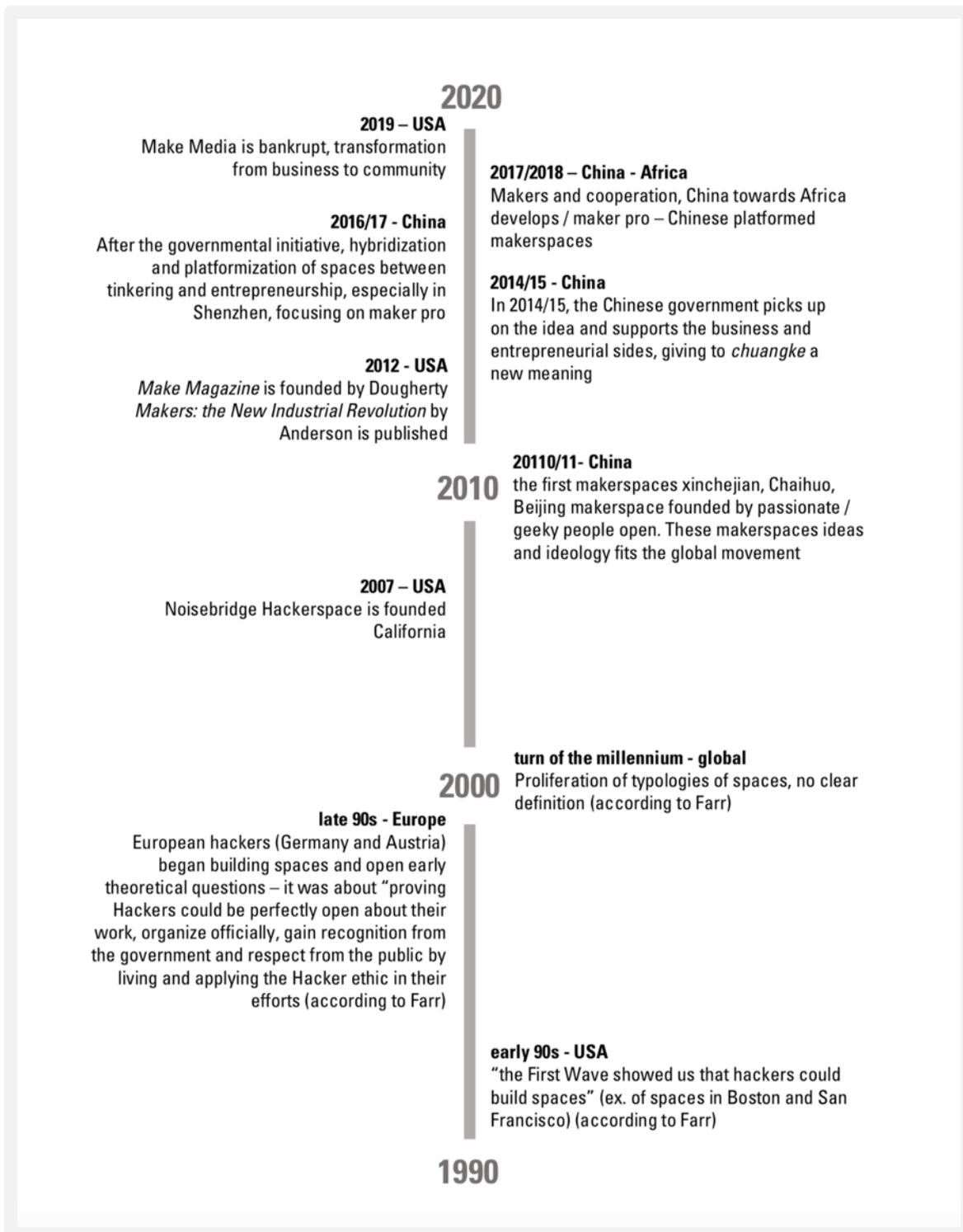


FIGURE 32:

Global maker culture timeline (1990-2000)

© author (2019)

The first makerspaces are alternative spaces, then they potentially become integrated in the structures of places and the local economy by providing services (workshops, prototyping etc.) to the general public, schools or developing as businesses. In China, this global maker culture and movement reflects a unique societal moment of change where intellectual and manual work have been condemned and praised historically (see (U 2019) a Hong Kong American Associate Professor at Berkeley, US and sub-chapter on Elitism and accessibility)). The depreciation of manual work and the rise of access to consumption creates a need to reconnect to objects with intellectual and manual work combined. These modern technology structures represent an opportunity.

Once the structures are integrated, they can focus on spreading and sharing more. In Shanghai, the way members of XinCheJian has developed their own projects, spaces and companies inspired by the specific moment of their life they were members of XinCheJian or in the Shenzhen with the particularity that this pattern is also spreading further, through members, to African countries for example (see Chapter 6). In general, the maker movement and its existence are as much enthusiastically received as criticized. Makerspaces and makers exist but they are micro-communities and have limited size of members and of co-communities.

Despite the marketing clangor of the “maker movement”, shared machine shops are currently **“fringe phenomena”** since they play a minor role in the production of wealth, knowledge, political consensus and the social organization of life. Interestingly, however, they also prominently share the core transformations experienced in contemporary capitalism. That is, for the individual: the convergence of work, labour and other aspects of life. Moreover, on a systemic level: the rapid development of algorithmically driven technical systems and their intensifying role in social organization. Finally, as a corollary: the practical and legitimation crisis of modern institutions, echoed by renewed attempts at self-organization (Troxler & Maxigas 2014)

Considered as a “fringe phenomena” (Troxler & Maxigas 2014), this rather marginal movement inscribes itself in a “maker culture imaginary” (Shea & Xin 2018: 54) where the narratives shape understandings, spaces and narratives. The margins allow to better understand the center, and therefore the phenomena of innovation politics in China.

Maker Movement in China – a timeline

To get a wider picture of these entanglements and their implementation in the urban fabric, let’s look at a Chinese focused timeline. The maker culture which we write about started growing in China step by step with different actors. In 2008, 2009, first actors, which have important positions in the Chinese maker culture start positioning themselves. In 2010/2011, the first makerspaces’ initiatives start and open. In 2012, the maker public annual activities start with the maker carnivals and maker faire and main publications on global and Chinese makers are published by Anderson and Lindtner. In the continuity of the first makerspaces, more of them open in 2013 and 2014. In 2015, the Chinese government positions itself promoting the chuangle maker-entrepreneurship and launching officially supported events adding to the already existing

ones. Maker Faires and Maker carnival continue happening yearly. While the maker trend diminishes, new alternatives and businesses appear as well at the same time as others close.

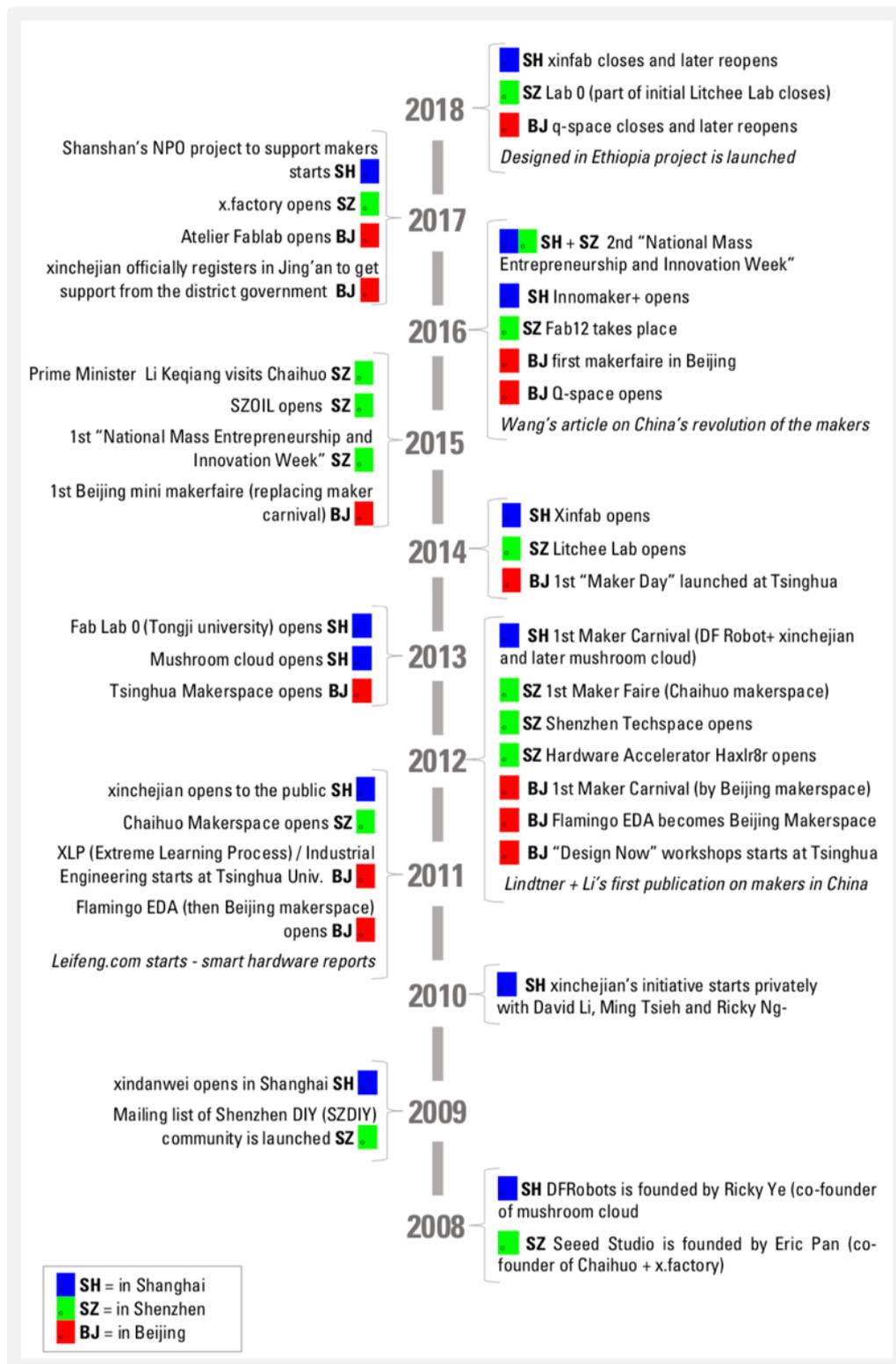


FIGURE 33:

Chinese maker culture timeline (2008-2018)

© author (2019)

The revolution of the makers, global

With his book “Makers: The New Industrial Revolution” (2012), Chris Anderson, entrepreneur and journalist, former chief-redactor at WIRED magazine³², has opened the path to more focus and interest towards the makers. This revolutionary attitude is linked to the spreading of the Internet and the fast and wide digitalization of things: “The biggest transformation is not in the way things are done, but in who’s doing it. Once things can be done on regular computers, they can be done by anyone. And that is exactly what we’re seeing happen now in manufacturing” (Anderson 2012: 18). The access to information, knowledge and the easiness of communication are main factors. Dougherty, CEO of Maker Media and maker faire³³ believes the makers are bringing a revolution but as a form of cultural shift and democratization of knowledge and technology:

It is a prototyping revolution that seems to follow from the desktop publishing revolution, allowing more people to turn an idea into a tangible object. Economist Jeremy Rifkin called it “the new industrial revolution”. However, it’s not a revolution that will see more people working in factories. Instead more of us will own or have access to the equipment that a factory might have, as one might have access to equipment at a gym. More than an economic change, the Maker Movement is a cultural shift that is leading to a creative flourishing of art and science, technology and craft, a hands-on renaissance that is producing new tools and new ways of thinking (Dougherty & Conrad 2016: XX).

Silvia Lindtner who published several articles on hackerspaces in China since 2012, also with David Li, starts her abstract of article “Hacking with Chinese Characteristics: The Promises of the Maker Movement against China’s Manufacturing Culture” the following way:

From the rising number of hackerspaces to an increase in hardware start-ups, maker culture is envisioned as an enabler of the next industrial revolution—a source of unhindered technological innovation, a revamp of broken economies and educational systems. (Lindtner 2015: 1)

Silvia Lindtner is an Austrian researcher who brought attention the makerspaces in China just before and during the boom of makerspaces in 2015. She is now assistant professor at the University of Michigan in the School of Information. The teleological views by Dougherty and Lindtner & Li serve the purpose of the maker movement ideology. Their writings have reinforced it. The challenge with these narratives, considered here as the classical ones, have shaped or even been embraced by the Chinese government. There is a need to look at an alternative perception, and it is what I intend to do in this chapter.

Jing Wang, for example, with a more critical approach writes an article on “The Makers Are Coming! China’s Long Tail Revolution” (Wang 2016) with a wider comprehension of the government and citizens interactions. Her article can also be read with some irony, as she

³² WIRED is a monthly published American magazine focusing on emerging technologies and their impact on culture, economy and society.

³³ Maker Faire is a branded event launched by Make magazine to celebrate maker projects. It is globally celebrated.

underlines the utopic or dystopic role of the citizens on this innovation road. She is a Professor of Chinese media and Cultural Studies at MIT and founder of the MIT New Media Action Lab. The narrative around the revolution brought by the maker movement exists and attracts attention. While Troxler, a Swiss researcher and applied research professor on Revolution in manufacturing at University of Rotterdam, writes about making the “next industrial revolution” (Troxler 2013: 181), Berrebi-Hoffman, Bureau and Lallement, French sociologists of work at the Conservatoire national des arts et métiers (CNAM) in Paris wonder if makers are on the path of post-capitalism (Berrebi-Hoffman et al. 2018: 12), Pip Shea, a research associate in the School of Media, Film and Journalism at Monash University, Australia, and Xin Gu, a Lecturer in the same school, write about a “Maker culture imaginary” in their article “Makerspaces and urban ideology: the institutional shaping of Fab Labs in China and Northern Ireland” (Shea & Xin 2018: 4). Therefore, I ask myself: What does a maker revolution connect with? Are there historical roots?

FROM THE ARTS & CRAFTS TO THE FAB LABS: HISTORICITY, RESISTANCE, & MYTH

Globally, the maker movement inscribes itself in a historical trend of questioning the work culture, standardized mass production. The maker culture and makerspaces, through tinkering, sharing knowledge and doing, re-connect to the objects and work towards a disalienation of the link between producers and consumers, or due to the fast rise of automation in industry, between production and consumption.

Today, all of us are consumers. In consumer culture, we define ourselves based on what we buy or own. Consumer culture disables us in some ways, and people can feel entitled, expecting others to do things for them [...]. This kind of consumerism disconnects our desires from our won work, the work that is required to realize our desires. We are often left unsatisfied and unfulfilled, perhaps not even knowing what we truly desire. In the extreme, consumerism is a form of learned helplessness. In consumer culture, making is something that we’ve forgotten we can do. It has pushed making from the mainstream to the margins. However, there’s something else available to us: We can see ourselves as producers. In maker culture, we define ourselves based on what we can do, and what we can learn to do (Dougherty & Conrad 2016: XVII).

Reconnecting to the “New Maker Wanted” event by Xindanwei (as on p. 36), which later became the origin of the first makerspace in China – change of consumption style is at its heart. The fieldwork shows that there is this wish to learn and do with own hands but not specially for the ideology of non-consumption, rather for an empowerment of oneself and the opportunity to create something different. Mass production and mass culture are driving the economy and has alienated producers, designers and consumers (Bosqué et al. 2015; Menichinelli 2015). This discussion recalls the debate around Culture Industry of the Frankfurt Schule with Benjamin, Adorno and Horkheimer (Benjamin 2003; Benjamin & Jennings 2010; Jameson 1979). It’s a philosophy-based school of thought in the context of knowledge production against conformity and social standardization. At the beginning of the era of technical and mechanical reproduction, which challenged the idea of the value of work and more specifically, work of art. While Benjamin values

the work of reproduction in a certain measure, other discussants as Adorno and Horkheimer rather fear the massification of objects. Nowadays, Ross, journalist and music critic at The New Yorker journal, underlines the realm of consumption is fulfilled by the capacities of mechanical reproduction and of mainstream needs:

The Internet threatens final confirmation of Adorno and Horkheimer's dictum that the culture industry allows the "freedom to choose what is always the same." Champions of online life promised an utopia of infinite availability: a "long tail" of perpetually in-stock products would revive interest in non-mainstream culture (Ross 2014).

The Internet is on at the same time a tool for "freedom of consumption", a tool for self-empowerment through the democratization of knowledge and a control tool. The maker culture is providing an access to technology which has a democratizing effect on design producing blurred categories: "amateurs are now tweaking and customizing these very technologies, through for instance, hacker culture. [...] In these cases, the fluctuating boundaries between designer, maker and user have disappeared altogether" (Beegan & Atkinson 2008: 312). This culture is at the heart of a paradox where the accessibility creates a risk of standardization and at the same time with the opportunity - through hacking or self-creation - to create a uniqueness. The risk is that the success of uniqueness is in the mass production of the unique product. At the same time, access to consumption (of mass-produced goods) can be an improvement of life quality and a form of empowerment (Miller 1995). Therefore, the following questions rise: Is the maker movement - globally - a resistance to mass production or an integration to it / of it?

Resistance to mass production or integration?

Globally, the maker movement can be thought as a form of re-appropriation and resistance to mass production and alienation to the products easily consumed. These kinds of dynamics have already existed in the past and question the way of doing, making, manufacturing (Berrebi-Hoffman et al. 2018: 38-39). The arts and crafts movement, born in the 1860s with important figures such as Ruskin and Morris, is a movement which marks the opposition to machinery and calls back to the object's truth and self. Berrebi-Hoffman, Bureau and Lallement identify three types of collective resistances to the standardization of work and the human in the context of work, namely the Shakers³⁴, the Arts and Crafts and the French journal "système D"³⁵ (Berrebi-Hoffman et al. 2018: 41) and consider the maker movement being a next one of these steps. Nowadays, printed journals like "système D" have been replaced by online journals or blogs, and, in China, WeChat accounts.

³⁴ The Shakers is a religious group formed in the UK (18th century) and organized in the USA (18th century). They are famous for their equalitarian lifestyle, their architecture, furniture and technological innovation).

³⁵ *Système D* is also a French expression meaning to tinker, to hack, to find undefined creative solutions.

The idea of resisting the working standardization and massification is not new but needs to be inscribed in a historicity. Therefore, we are here going to look at the Arts and Crafts are connected to the maker culture and movement. The Arts and Crafts, as the maker culture, can be considered as a movement and as a deeper global reflection of the means of production, consumption and the place of the maker / producer / manufacturer. In order to have a wider understanding of the impact of the maker movement in the production modes, let's go back in history and look at the Arts and Crafts movement, which was born from a reaction against the industrial production system in the United Kingdom in the last decades of the 19th Century. This movement was inspired by John Ruskin, a British writer thinker and philanthropist, and later carried by William Morris, a British designer, poet and socialist. His thoughts resonate with today's fears of technological changes such as automatization, digitalization of progressions and development of Artificial Intelligence (AI). The repetition and reproduction of work alienates and asks for a rethinking of a system in place. While the Arts & Crafts was clearly a political activist movement, the maker movement in China is suggesting new ways of producing with fairly no political engagement.

Nothing should be made by man's labour which is not worth making, or which must be made by labour degrading to the makers. [...] I have said that people work no less laboriously than they ever did; but I should have said that they work more laboriously. The wonderful machines which in the hands of just and foreseeing men would have been used to minimize repulsive labour and to give pleasure, or in other words added life, to the human race, have been so used on the contrary that they have driven all men into mere frantic haste and hurry, thereby destroying pleasure, that is life, on all hands: they have, instead of lightening the labour of workmen, intensified it, and thereby added more weariness yet to the burden which the poor have to carry (Morris 2002: 252)

Morris refused to separate manual and intellectual work. With a will to democratize arts and giving crafts back to the craftsmen and women, Morris had a philosophical approach to the first industrial revolution: "The craft aesthetic was concerned with fitness and propriety; it demanded that materials and function should determine the design solution, and because nature expressed herself in a multitude of exquisite shapes, forms and colors, it permitted what Morris might have called "the blossoms of the art of design" [...]. These assumptions concerning the nature of the design process were fundamental to nineteenth-century design philosophy, as it developed in England, and they had been formulated long before the Arts and Crafts movement appropriated them and associated with them the especial virtues of handwork" (Naylor 1971: 147). The Arts and Crafts movement had an ethical position of thinkers with a political activism to re-empower the craftsman and reverse the alienation process due to the industrial revolution. The maker culture is less intellectual with a more self-development and self-empowerment approach rather than a general re-capture of the aesthetic object.

In another time and place, here in China, the maker culture was initiated by local and international migrants (Chinese, international Chinese and foreigners) with an orientation towards electronics and technology. The Arts and Crafts movement was driven by artists hoping for a better world with a conscious engagement and message in politics. Their revolutionary thoughts were against the system in place and has, in addition of spreading in the world, influenced the history of design

and production as Crane writes: “The organized factory and the great machine industries will continue to work for the million, as well as for the millionaire, under the present system of production; but, at any rate, they can be influenced by ideas of design, and it must be said that some manufactures have shown themselves fully alive to the value of the co-operation of artists in this direction” (Naylor 1971: 148–149). In China, the aim for a better world and a change in the system is not a priority for the majority – the middle class – it is much more an individual step.

Makers perceive themselves as producers, not as consumers. The current context in which the making movement is spreading, is also impregnated with the re-appropriation of the crafts with a more bottom-up approach. There is a “willingness to reclaim the history of domestic crafts, engagement with notions of everyday activism, agency, and ingenuity, and a desire to act independently are all defining characteristics of the new super-connected amateur who, while not necessarily a trained craftsperson, draws on a wide range of knowledge and experience to contribute to an expanded notion of what craft might be” (Hackney 2013: 183). This amateur is reflecting a certain access to materials and information as well as the existence of free time. In China, free time is rather new (Wang 1995: 149). Technologies and access to consumption are feeding ways of thinking and economies of making and micro-businesses: “They critique, or at least demonstrate, ways to negotiate competitive, consumerist capitalism and the specter of unhealthy, isolating, empty and unrewarding lives” (Hackney 2013: 187). At the bottom of the maker movement, there is a genuine interest for trying, tinkering, understanding, sharing and learning. There is an empowerment in making and designing for one’s own curiosity which is taken over in new economic discourses. The maker movement and the Arts and Crafts movement, even if different in time and place, are a reaction to the mass production modes and its alienation to the objects and its making. Arts and Crafts had the belief that “design could be more than a business to produce shoddy goods for the market [...] with a concern for quality and the desire to make things of beauty” (Margolin 2015: 229). As Morris had written, it is important to have pleasure in work. Revolution will come through happiness and beauty (Morris 2011: 66). This positioning is very close to the ideals surrounding maker activities. Makers want to enjoy their hobbies and their businesses, to realize something for themselves, develop their individuality. In this thesis, I argue that they paradoxically are empowering themselves through individualized projects, as well as through the access to the market and to collectively accessible goods. Chinese people, as Steele and Lynch, American sociologists, show in their research have become more individualistic than collectivist:

[...] while support for collectivist economic policies has increased in tandem with the transition to a market economy, the link between these attitudes and individuals’ evaluations of their well-being has diminished. Thus, the individualist moral code may be trumping the collectivist one in terms of what is most important to individuals in their everyday lives (Steele & Lynch 2013: 8).

These wishes for individuality contrast to the harmonious society project introduced by Hu Jintao in 2012 for the rejuvenation of the country, which is later followed by Xi Jinping adding to it the China Dream (Mohanty 2012; Wang 2013) (see Chapter 5).

Both movements concern primarily the middle class and therefore people who have time and energy to tinker or to build a new project. Even if the global maker movement was initially a bottom-up movement for fun and discovery, it has been taken over in new economic discourses and seems to create global trends of entrepreneurship. The state co-optation of this movement draws a line between the initial will and the now official “mass innovation” trend losing the aim of singularity and appropriation. It is not a social movement in terms of political resistance but a space of transition for a form of self-empowerment, as I observed in the field.

Myth or revolution? dynamics and illusions

Creativity, understood as inventiveness, creating something new, could be a form of resistance to consumption or a new way of consumption by Shorthose, a cultural research and creative consultant (Shorthose 2004): “Situated creativity is best viewed not as an extension of evolutionary economics in the industrial mode, nor of cultural studies in the critical mode, but rather as an ongoing dynamic tension between economic evolution and socio-cultural evolution exemplified by the emergent phenomena of consumer co-creation” (Potts et al. 2008: 472). Potts, a New Zealand economist, is following Anderson’s point of view who describes makers as the new industrial revolution but a revolution which won’t overturn the capitalist system but will extend its transformation. Making would therefore be a brand more than a social movement, a way to sell more, better and faster. The makers would only represent an economic and political top-down approach: “Branding traces one trajectory back to the marking of livestock with heated plates of iron; its aim is not social change but rather the commodification and attachment of meaning. Both social movements and branding can attract publics, but while a movement is typically understood to be a bottom-up phenomenon, brands usually originate from the top down” (Bean & Rosner 2014: 26). This approach and critic of the American “makers” perfectly fits the Chinese state co-optation movement of 2015 into a wider plan to fuel and diversify the economy. If the state uses mass makerspaces to promote the movement in which it loses its initial understanding, we are looking at an adaptation to the modes of production but also the destruction of singularity:

Capitalism, as a production of modes of life, as a proliferation of possible worlds, proves to be a force of anti-production and destruction of the cooperation between minds and its biological conditions of existence in several respects [...] it destroys the power of creation and reproduction of individual and collective singularities since it continues to measure the process of the constitution of difference and repetition as “work” (Lazzarato 2004: 203).

In China, capitalism is deeply rooted: “By turning to capitalism, China re-embraced her own cultural roots” (Coase & Wang 2012: 201–203). Therefore, the research on makers is at a crossroad of culture, politics and economy and history. The repetition and reproduction of work is part of the different dynamics. Capitalism is part of the consumption-oriented path of Chinese development to which mass production is part of. If making is a reaction to the mass production mode, the idea of mass makerspaces is a factor of alienation, but if making is a form of adaptation

and renewal of the manufacturing and industrial production, the idea of mass makerspaces can be a starting point to something new.

CHUANGKE – MAKING WITH CHINESE CHARACTERISTICS, THE HISTORY OF YESTERDAY

The Chinese government saw in 2015 the opportunity makerspaces were representing for the country's economy and society. The country is in the phase of reforms in order to create more competitiveness and more diversified economic actors and stakeholders (see later). It is therefore extremely interesting to look at a co-optation dynamic coming from the government and confronting a bottom-up grassroots culture with a top-down initiative.

System and context

The ambitious vague priorities of the government set the tone of the priorities of the whole country in a top-down mode and is followed by the counties and cities leading to experimentations and competition. The different layers of the government have to find their own ways to apply the given framework to their local policies and politics. The following graph helps understanding the complexity of the Chinese governance system and the levels through which experimentation and innovation go:

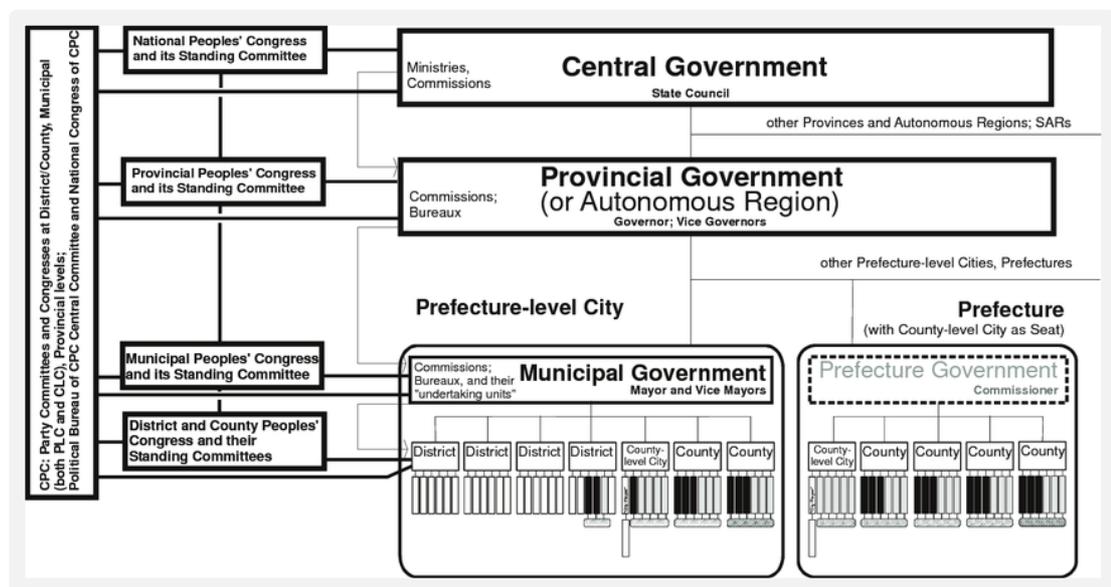


FIGURE 34:

Stylized Model of China's Governance System
screenshot ©author (October 2019)

Reproduced with the kind permission (Kamal-Chaoui et al. 2009)

China's leadership promotes economic growth and therefore also maintains the rule of the Communist party. According to Hou and Holme, independent researchers in human-centered research methods, this system has an extremely strong core managed through the elite: "Central to the Chinese system—the world's largest and most elaborate hierarchical system for control and mobilization—is the CCP-controlled elite management system" (Hou et al. 2018: 254–255). The top-down strategy of China is strengthened by the strategic elitist placing of representatives. Therefore, it is important to keep in mind the structure of the system (Dutton 2005; Naughton 2006). Saich, Professor in International Affairs at Harvard University, USA, underlines the negotiations, discussions and tensions in such a complex system:

[...] the complex relationship between the Centre and the localities, especially related to financial questions and how adept lower levels have become at protecting their own interests against higher-level institutions and those at the same administrative levels. This process of bargaining and negotiations makes it difficult to accept one particular approach to policy-making or to be able to predict accurately policy outcome as each organization will attempt to bend policy to its own advantage. The resultant system is extremely complex with enormous institutional fluidity, ambiguity and messiness [...] (Saich 2018: 213).

13th 5-year plans– a framework

With the government bringing reforms and initiatives to shape an innovation-driven country, the 5 years plan plays an important role. Every 5 years since 1953, China prepares and presents a new plan for the next 5 years to strategically shape its economy with social and economic development initiatives. With the 13th 5-year plan *wunian jihua/guihua* 五年计划/规划 (2016-2020) taking into consideration the challenges of rapid urbanization (Xinhua 2016a) and the new guideline released on 21 February 2015, cities are at the heart of Chinese political considerations (Zheng 2016) and the government favors the development of a country of innovation. The second major objective of the 13th 5-year plan, which is published in English on the government's website, is to achieve significant results in innovation-driven development:

We will pursue innovation-driven development, ensure that business startups and innovation flourish, and see that total factor productivity is markedly improved. Science and technology will become more deeply embedded in the economy, the ingredients needed for innovation will be allocated to greater effect, major breakthroughs will be made in core technologies in key sectors, and China's capacity for innovation will see an all-around improvement. Fulfillment of these goals will help China become a talent-rich country of innovation.

Also upgrade in the structure of consumption. To adapt to the more rapid upgrade in the structure of consumption, we will work to improve the environment in which the potential of consumption is unleashed, better satisfy and create consumer demand through improved and innovative supply, and constantly strengthen the fundamental role that consumption plays in fueling economic growth. We will channel great energy into expanding consumer spending by increasing consumer buying power, improving consumer expectations, and tapping rural potential for consumption. [...] We will help develop new models of consumption, such as the integration of online and offline consumption. We will see that the quality of consumer goods is improved, strengthen the protection of consumer rights and interests, and give full play to

the role of consumer associations in order to create convenient, worry-free environments for consumption. We will actively work to encourage those who are used to shopping overseas to buy domestic products. We will improve the distribution of duty-free shops across major tourist destination cities and develop international consumption centers. (Central Committee of the Communist Party of China 2016)

Not only are the new guidelines, shaping the priorities of the coming years, published and shared with the different levels of the government, and in English as mentioned earlier. In 2015, when the Chinese has even published a well-designed video in English with a song describing what the 13.5 *shisanwu* 十三五 is. Foreigners in China and the world were taught in a fun and informative video the importance of the Chinese government planning and underlining the discussions and work around it.



FIGURE 35:

Extracts of the video “a song about China’s 13th 5-year-plan”, October 2015 screenshots ©author (February 2019)

Source: The 13 WHAT – a song about China’s 13th 5-year-plan on www.youtube.com

Institutionalization / co-optation

The maker movement, which is a grassroots movement promoting manual activities and knowledge sharing has started in China with the opening of the first makerspace in Shanghai. Since that moment, similar spaces where tools, ideas and knowledge are shared, spread in China and called the attention of the government, which is implementing new policies:

A State Council executive meeting on Feb 3, presided over by Premier Li Keqiang, decided to deploy resources and **efforts to develop makerspaces to accelerate the cultivation of the new driving force [...]** (State Council of PRC 2016)

On January 2015, he visits Chaihuo makerspace in Shenzhen. Despite the different epoch, Li Keqiang's traveling to the South to promote new economic pathways and supporting local entrepreneurial initiatives reminds of Deng Xiaoping's Southern tour in 1992 to gain support for more reforms (Shambaugh 1993; Zhao 1993: 488). Visiting Chaihuo makerspace is an interesting strategic move. It is situated in Shenzhen, the export city of Shenzhen known for its dark industrial history, which ecosystem needs to be valorized in a new way. It is co-founded by Eric Pan from Seeed Studio, a Chinese private company with national and international markets. It is supported by the latter and completed since 2017 by x.factory. The message for supporting makers and Chinese entrepreneurs in tech was sent through this move.



FIGURE 36:

Premier Li Keqiang visits Chaihuo makerspace in Shenzhen on 5 January 2015
screenshot ©author (June 2019)

Source: http://www.gov.cn/premier/2017-04/18/content_5186893.htm

This strategical view on makerspaces has changed the course of the maker movement in China, its spaces and the meaning of makerspaces *chuangke kongjian* 创客空间. The government integrated the makerspaces to their initiative to cultivate this “new driving force” with the idea that these tinkerers would swiftly become successful entrepreneurs (Hoffman 2006; Renaud et al. 2017). The following map has been published by the government on its webpage on 7 May 2015. The design of the page shows on the top right, the sun partly behind a cloud, maybe a sign that the makers are coming to the foreground of the image and of the economic strategy.



FIGURE 37:

Major Makerspaces in China in 2015

© The State Council of PRC/Kang Chao (2015)

Source: <http://english.www.gov.cn/r/Pub/GOV/p1/Content/Policies/Images/2015/05/07/maker.jpg>
(dead link)

It shows eight cities, which are part of the wealthiest in the country, with six of them: Beijing, Nanjing, Shanghai, Hangzhou, Guangzhou and Shenzhen having makerspaces which opened between 2011 and 2013. Beijing and Shanghai are part of the top 10 wealthiest (China Daily 2018) cities of the world. Shenzhen with Huawei, Hangzhou with Ali Baba, Nanjing the former capital of China and Guangzhou the capital of Guangdong, biggest exporter of China in 2016 (Geoshen 2018; Mac & Evangelista 2017; Tombe & Zhu 2019). Chengdu, the capital of Sichuan, and Dalian, a major city and seaport in Liaoning province, are cities on the rise and designed here with the intention they would further develop in the given direction. It is also important to see that the above shown infographic has been published in English, on the English website of the State Council of the People's Republic of China english.gov.cn, which means that this is also an information to be shared and to show the world China's further moves towards innovation and strategic development. Also, it has never been updated, which is unusual in the reality of the maker culture which is changing extremely fast. The Chinese government never directly reiterated their interest in the maker culture since the mass makerspaces initiative in 2015 (Liu 2015). The grassroots identity of makers is now in parallel, and possibly in contradiction, to the maker identity promoted by the state with a concept of mass entrepreneurship: "building a new type of entrepreneurship and innovation platform can provide low-cost specialized services for the development of an innovation-driven strategy. Therefore, pilot innovation platforms at the national level should be set up to promote the development of mass entrepreneurship and innovation bases in various places" (State Council of PRC 2016). Focusing on entrepreneurship, innovation and economy renewal, this process of pilot tests, then implementation is classical in China since Mao (Heilmann 2008a: 3–4).

The maker movement has been interpreted more widely in China focusing on entrepreneurship and education from the government and institutions while keeping some spaces for hobbyists. As David Li mentioned during a meeting,

*The hobbyist part of the maker movement is a **mistake** [...] why should the government pay for people who play golf? [...] If the government shouldn't pay for golf parks for people to enjoy, neither should it pay for hobbyist makerspaces (Interview David Li, co-founder of XinCheJian and SZOIL, September 2017).*

The professional maker /entrepreneurial side of the maker culture makes sense. Nevertheless, in Shanghai a non-profit organization (NPO)³⁶ has been created by Shanshan to support the hobbyist type of makerspaces: "The people who were there before the governmental initiatives for entrepreneurship are still there once it stopped" (Interview Shanshan, former XinCheJian member, organizer of maker events at Shanghai library and founder of a non-profit organization supporting the maker culture, December 2017). The maker movement in this context is not one movement but possibly a culture or several movements. Shea and Xin contest the concept of

³⁶ To create a Non-profit organization NPO, you need direct support from two people in the government as well as going through several guided steps – for more information, see (Council on Foundations 2013)

maker “movement” and consider that maker culture is a more appropriate term (Shea & Xin 2018: 3). The perception of the movement varies according to the way it is looked at and how the imaginary around it has been built. Cities can show different interests in the national initiative and apply different strategies. Shanghai in the maker movement is famous for its first makerspace and the tinkering, freelancing, co-working side, while Shenzhen is the hardware and electronics city where entrepreneurs and makers can develop their projects. Beijing, as the capital, hosts the best universities of China: Tsinghua University and Peking University. The city has concentrated rather on the innovation zones around the universities and entrepreneurship coming out of it. At the same time, alternatives have been growing (see Chapter 5).

Generally, in China, due to a more pragmatic attitude and to the governmental initiative, makers are more freelancer and entrepreneur than hobbyist. Which is the contrary of the original maker culture dynamics and the situation in Europe and USA where “ while the majority of digital makers mainly engage in leisure and educational activities, some of them turn a hobby into a business and become digital maker-entrepreneurs”. (Troxler & Wolf 2017: 808). Dale Dougherty proposes a pyramid of the makers with amateurs at the bottom representing a majority, professional makers in the center and professionals at the top being a minority.

Wen Wen, lecturer at the Institute for Cultural Industries at Shenzhen University and author of “Making in China: Is maker culture changing China’s creative landscape?” (2017), takes the discussion one step further by showing that makers in China represent an inverted pyramid with a majority of professionals (Makers to market category), a middle category of Makers to makers (professional-amateurs) and a minority of amateurs (0 to 1 Makers).

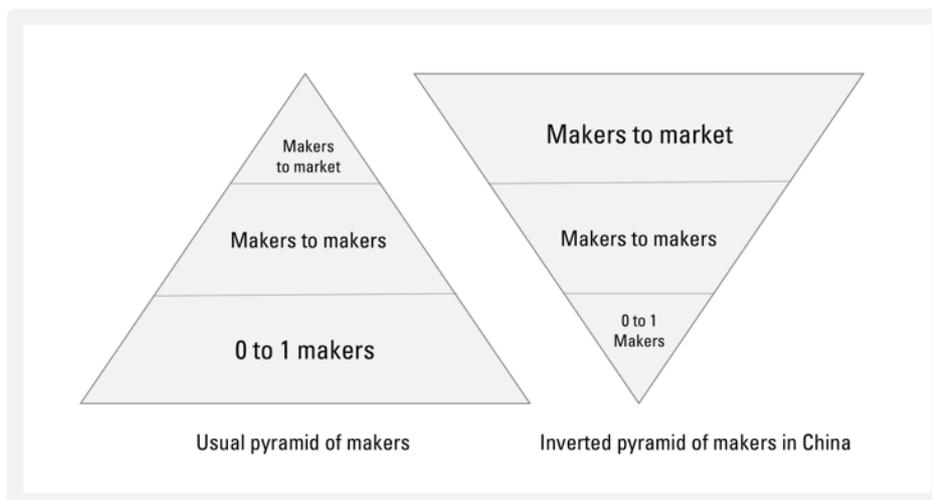


FIGURE 38:

Wen Wen’s pyramids of makers
 ©author (October 2019)

Redrawn by the author based on Wen (2017)

This inverted pyramid does not reflect the maker culture in China from 2011/12 to 2014, which was predominantly hobbyist, but does underline the *chuangke* vision and initiative from 2015 on in which these hobbyists would become professionals. Since the initiative, the tendency is of rather professional makers with the intention of participating to the market.

Indeed, the marginal global maker movement with an attachment to certain geographical places has become an ambitious Chinese project:

According to China's Innovation and Entrepreneurship Report in 2016, by the end of 2015, China has the largest quantity of makerspaces and incubators among the world with a total number of 4875. Within it, there are 1258 state-level platforms, including 515 of state-level makerspaces and 743 of business-level incubators, accelerators and industrial parks. Government-backed venture capital funds 1.5 trillion yuan (\$300 billion) in 2015. This represents five times the sum raised by other venture firms around the world combined (Chen & Wu 2017: 2).

The Chinese government has developed several initiatives among which one specifically concerned makerspaces. The risk of institutionalizing ephemeral structures of change is to not allow their natural evolution and failure opportunities by pushing entrepreneurship. It is a new type of culture.

Making vs innovating

Innovation and making are often mixed up as the process of making is in line with the concept of innovation. China is going from the stage of "made in China" to "created in China" and "innovated in China" (Wei et al. 2017). The government's desire for innovation from the citizens have brought a quick spread of the idea of the innovating maker. Innovation means "to make changes in something established, especially by introducing new methods, ideas, or products" (Oxford Dictionaries 2019) but in this context the definition of innovation is rather the process of transforming an idea or invention into a commercial good or service. It must be replicable and useful. Success stories of hacking turned into entrepreneurship with for example the garage culture: "Often associated with democratized innovation, the Maker Movement is inseparable from Web culture: think of garage culture moved to the Net" (Keane 2016a: 46) and start-ups starting from a garage such as the legendary American companies Apple or Google (Giang 2014). In China, there are no garages, therefore spaces of tinkering need to be created. The creation of spatial roots and a myth of origin marks a way of living, doing and learning. It is often in this mindset that inventions or new products later possibly commercialized sparkle.

China's initiatives, news and policies

Since the 2008 economic crisis, China started to rethink its development. Until 2008, and for approximately ten years, the rapid growth of the export-driven and investment-dependent model has shown to not be sustainable (Zhang & Gou 2016: 44–46).

According to Shea and Gu, the global crisis impact was very visible in Shenzhen where “Over six hundred manufacturing plants were shut down and over fifty thousand workers were made redundant. This sparked fears that Shenzhen, a formerly diverse manufacturing city, was losing its competitiveness. Efforts were then made to reinvent Shenzhen’s image, to transform its traditional manufacturing base, and to attract new investments.” (Shea & Xin 2018: 4). The crisis of 2008 triggered an economic restructuring with an innovation-driven economy based on consumption with governmental efforts and priorities to bring appropriate reforms and initiatives (Naughton 2014: 14–15).

To look a bit more in details at the economic slowdown, this graph shows the growth rate in the perspective from 1960 to 2014. The GDP per capita experiences an exponential growth, while the growth rate, which was volatile, is stabilizing in a decreasing way. The economic opening with the reforms of Deng Xiaoping in 1978 have changed the average rate.

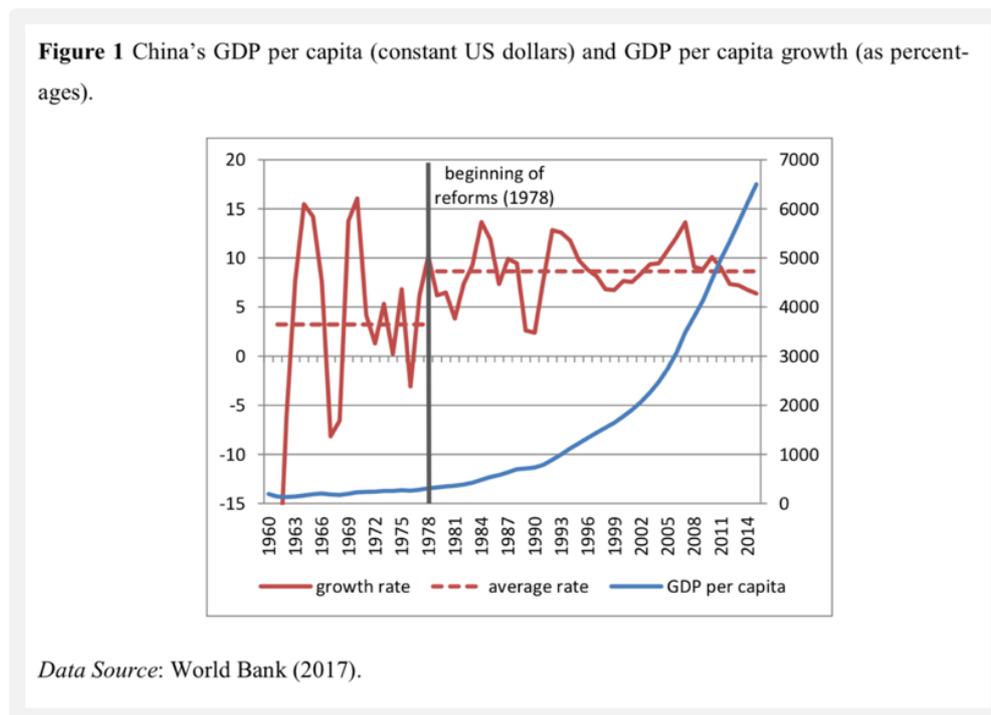


FIGURE 39:

China's GDP 1960-2014

© (Glawe & Wagner 2017)

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Keane writes that the economic crisis was “an opportunity for cultural reformers to spell out a new vision for China” (Keane 2013: 16). As the government needs to establish a new economic balance, the citizen finds its role as a creative, entrepreneurial contributor to an upgraded vision and dream of the Chinese nation and are therefore invited to “participate in collective “China-making”” (Pang 2012: 13). Economic slowdown has brought to rethinking the economic model and gave room to new strategies and initiative. As an example, the Chinese government has formulated the Anti-Monopoly Law, which came into effect in August 2008 with at its core the idea that “a competition agency should have autonomy from political branches and other government departments when initiating or resolving cases” (Kovacic 2017: 698). The process of change and of economic adaptations has been ongoing since then.

To better understand the presence of the China’s functioning in terms of initiatives and policies, the author will present five elements to support the dialogue. First, the economic and strategic context in which the Chinese government currently acts, then the policy Made in China 2025, which aims at contributing to this renewal and reform of economy, as well as the upgrade in terms of quality. Then, there will be a deeper look at innovation policies from 2013 to 2016 influencing the maker movement support, one step further will be to look at the mass innovation and entrepreneurship slogan and finally at the Internet +.

New strategies for economic slowdown and poverty (SOEs)

China’s development experience shows the importance of promoting sustainable growth on economic, social and environmental levels. Also, even if China is an economic power, its continuous discussion on poverty reduction stay central as the country is confronted to a large increasing gap between urban and rural income levels, Western and Coastal provinces as well as between rich and poor populations. In fact, more than 100 million people are still struggling below the latest national poverty line, CNY 2’300³⁷ (Worldbank 2019) referred to per capita annual net income of farmers. In addition, Chinese poverty headcount added up to 128 million, equaling 13,4 % of the rural population (Liu & Zhang 2017: 40–41). The ongoing progress justify the government’s economic planning and initiatives. From 1980 to 2017 over 800 million people (more than half of the population) were lifted out of poverty in China (Steiber 2018: 47).

The State Council released in February 2013 a reform plan that gives high priority to decrease social inequalities and rural-urban challenges in the promotion of further development in China. This new agenda will influence the way private companies conduct business in China and should contribute to a more sustainable development as it aims to delegate power to lower levels, support scientific innovation and open up to the outside world. The private sector is therefore encouraged and more motivated due to the competitiveness of the market and to the state’s reforms (Naughton 2017; Xinhua 2014a). These are a consequence of the higher profits of the private sector compared to State-Owned Enterprises (SOEs). Indeed, profits have been

³⁷ Is the equivalent to USD 334,0151 as of 9 July 2019.

significantly higher in private enterprises than in SOEs in 2012, 13.2 percent versus 4.9 percent (Cooper 2014). Prior to the financial crisis of 2008, SOEs were more profitable than private firms (Huang 2014). The reforms for more efficiency have involved restructuring SOEs through reorganization and reduction in excess capacity as well as diversification of ownership structures. According to the government's website, the country has 98 centrally managed SOEs compared to 117 five years earlier as a result of reforms and restructuring (Zhong 2018).

Central authorities in Beijing aims at transforming the state protected companies into globally competitive and efficient companies and reduce the high debts levels. These reforms are ongoing and in 2018, the government announced new measures for market opening with the hope to accelerate the pace of SOE's reforms and increase pressure to reach the adjustments: "The success of SOE reform holds the key to deepening China's supply-side reform, which, if successful, will raise the prospect of more robust growth in China during the next phase of its development" (Liu 2018).

In this context, the Chinese government and institutions were and are analyzing the possibilities to improve partnerships with the private sector and to support the development of the private sector and potential entrepreneurs to be. Technological development is one of the tools that the government prioritizes (Steiber 2018: 51).

Made in China 2025

Made in China 2025 *zhongguo zhizhao erling'erwu* 中国制造 2025 released in 2015 by Premier Li Keqiang. The strategic plan is oriented towards efforts to upgrade China from cheap quantitative manufacturing³⁸ to qualitative manufacturing with higher value products and services. (Li 2018). In general, this sector is challenged by the rising labor costs, environmental challenges and slowdown in exports. Made in China 2025 attacks these problems "by using mandates, subsidies, and other methods to persuade manufacturers to upgrade their factories to become more competitive, innovative, and efficient—in short, to become a pioneering, high-end manufacturing power" (Liu 2016). The plan represents advantages for the market, enterprises, strategy and talents and is implemented in 10 key sectors: new information technology, numerical control tools, aerospace equipment, high-tech ships, railway equipment, energy saving, new materials, medical devices, agricultural machinery, power equipment (Zenglein & Holzmann 2019). While revising the Made in China plan, China Daily reports that Li Keqiang "called on the nation to embrace technology such as big data, cloud computing, the Internet of Things and 3D printing. He vowed to deepen reforms of state-owned enterprises and provide more assistance to small businesses" (State Council of PRC 2015b). The focus on small entrepreneurs recalls the "individual household" *getihu* 个体户 - also defined as "petty capitalists who ran small businesses with less than seven non-kin employees" (Hsu 2006: 2). The concept of small-sized entrepreneurship appeared in the economic reforms of the 1980s after these practices were illegal and punishable

³⁸ And move away from being the World's factory as familiarly used.

for twenty-nine years. *Getihu* reflects a time of change in China's economy, society and politics as well as the spreading of entrepreneurship and the re-creation of competitiveness: "The private sector has a competitive edge over state and collective enterprises in capturing the opportunity offered by the demand side changes in consumption patterns (Kong-Wing Chow & Wing Kwong Tsang 1994: 32). Associations to support private business and create bridges between this and the government were rising (Unger 1996: 795). The pattern of supporting smaller initiatives is also seen in the "push for innovation" urged by Li Keqiang – who, a few months before this news, was visiting Chaihuo makerspace in Shenzhen. The diversification of the economy with an industrial upgrade are part of the initiative. Government partners or non-profit organizations can be bridges for small enterprises and government, and international networks such as Make or Fab Labs can be an outreach for the Chinese new type of entrepreneurship.



FIGURE 40:

Premier Li Keqiang urges greater push for innovation, on 17 June 2015
screenshot © author (February 2019)

Source: English.gov.ch

With the mass entrepreneurship and mass innovation slogan, Li Keqiang, links grassroots maker with national wealth. One of the main manifestations of "productive digital activity is in 2015-2016 the maker culture. The image of the maker as entrepreneur departs from the global idea of the maker as a creator, a creative professional" (Wang 2016: 46) :

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 & Deng 2015).

In the TV reportage above, Li Keqiang underlines the importance of 3D printing, which is often central to and in makerspaces or at least to the narrative of makerspaces. Makers are a way to create small scale economy, promote sharing economy and change the image of the industrial China. Cities position themselves on the questions of the makers and on manufacturing – the concept is evolving and adapted in education and business. Shenzhen for example, as a mass manufacturing industrial city, has specially welcomed and integrated the strategy with hundreds of makerspaces opening using the narrative of the maker culture as a key for transformation.

Innovation policies 2013-2016

This sub-chapter presents a selection³⁹ of innovation policies in China from 2013 to 2016 considered having influenced the evolution of makerspaces in China. The State Council announces plans and initiatives which are then adapted by each province or municipality its own way. Beijing and Shanghai are directly administered municipalities, while Shenzhen is under the Guangdong province. For this reason, the table presents the innovation policies selected by the State Council on the national level, and on local levels by Beijing, Shanghai, Guangdong and Shenzhen.

(1) NATIONAL LEVEL

15.01.13	Announcement of releasing the 12th 5-year plan concerning the construction of national independent innovation capability	The State Council	A review of the 11 th 5-year plan about innovation, an analysis of the current status of innovation and an illustration of the 12 th are introduced, including aim and main missions, etc.
02.03.15	Suggestions on developing maker spaces and promoting innovation and entrepreneurship	The State Council	Key document marking the beginning of chuangke (Maker) project in China, which consists basic principles and major tasks: <ul style="list-style-type: none"> -accelerating the pace of building makerspaces -lower the innovation and entrepreneurship barrier -encourage scientific talents and university graduates to start businesses -support public services of innovation and entrepreneurship - enhance funding support and improve mechanism of investment and financing -enrich activities of innovation and entrepreneurship -build the cultural atmosphere of innovation and entrepreneurship
28.07.16	Announcement of releasing the 13th 5-year plan concerning S&T innovation planning	The State Council	Specific plan for 2016-2020 concerning innovation. Figures and tables of major targets, key national projects, key S&T projects, etc. have been included.

³⁹ The pre-selection and translation of the initiatives was made by Betty from Swissnex Shanghai in 2016. The full list is accessible in the annex.

(2) BEIJING – MUNICIPALITY UNDER DIRECT ADMINISTRATION / CITY – URBAN AREA ON PROVINCIAL LEVEL

14.04.14	2014-2017 Beijing Action Plan of Technical Innovation	Beijing Government	Innovate concerning management, policy insurance, hosting key projects, etc. Departments in charge and specific responsibilities are included. System / Admin. Efficiency
17.09.15	2015-2017 Action Plan of Creating Innovation Alliance among Beijing, Tianjin and Hebei	Municipal Committee of Science and Technology	Main principles including 3 axis development groups, "4+N". Main methods including building 3 mechanisms and 3 platforms, etc. Management / regional platforms
28.10.16	General Plan of Enhancing Beijing as the National S&T Innovation Center	State Council and Municipal Committee of Tourism Development	Forwarded policies from the State Council. Main tasks include support the development of hi-tech economy, cooperation among Beijing, Tianjin and Hebei Province, establishment of international partnership, etc. Project development

(2) SHANGHAI – MUNICIPALITY UNDER DIRECT ADMINISTRATION / CITY – URBAN AREA ON PROVINCIAL LEVEL

27.05.15	Suggestions of Shanghai Government on Building S&T Innovation Center with International Influence	Shanghai Government	Targets, general requirements are included. Methods include building market-oriented innovation mechanism, changing the management format of funds, fostering reform among research institutes, encouraging the engagement of enterprises, etc.
16.08.16	Shanghai S&T Innovation Plan in the 13 TH 5-year Plan Period	Shanghai Government	General requirements, specific missions and organization plans, etc. have been included. Action plan

(2) GUANGDONG – PROVINCE – ON PROVINCIAL LEVEL

29.03.16	Suggestions on Fully Promoting Innovation and Entrepreneurship	Guangdong Provincial Government	Main tasks including creating innovation market environment , building innovation brands, etc. Detailed supporting policies concerning loans, incubators, fund management, etc. are also included.
25.04.16	2016-2020 Action Plan of Building Independent Innovation Sample Zone in the Pearl River Delta	Guangdong Provincial Government	Make appropriate definition of different areas with different emphasis; Increase the leading position of hi-tech zone; Deepen cooperation among Hong Kong, Macao and Taiwan; Enhancing core competitive capability of manufacturing industry; Increase the level of modern service industry; Develop strategic new industries; Create innovation industry groups; Increase the internalization level of industries; Accelerate the establishment and development of new R&D institutes; Foster cooperation among research institutes and industries; Perfect incubator system; etc. Departments in charge of different tasks have been clarified. Regional action plan

(3) SHENZHEN – PREFECTURE-LEVEL CITY ADMINISTERED BY GUANGDONG

08.08.16	Suggestions on Fully Promoting Innovation and Entrepreneurship	Shenzhen Government	Innovate mechanism, optimize financial and tax policies, enhance supports on entrepreneurship, realize interaction between industry and investment, build new platforms, etc. City's action plan
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Makerspaces are generally understood by the government, since 2015, as part of the entrepreneurial culture, which can significantly nurture innovation and be integrated in the entrepreneurship ecosystem. In this perspective, it will transform China's economy from manufacture to innovation. From the comparison of the cities' policies, Shenzhen is the only one that highlighted the makerspaces separated from the "mass innovation and entrepreneurship". The reason is the need of Shenzhen to re-brand its name and city by transforming the way the industrial ecosystem is perceived from a fairly negative to a positive one.

Mass innovation and entrepreneurship slogan in 2015-2018

Li Keqiang's well-known slogan "Mass innovation and entrepreneurship" *dazhong chuangye, wanzhong chuangxin* 大众创业，万众创新 often used shortened as the double *chuang* / double creation *shuangchuang* 双创, is an initiative which started in 2015 with numerous ongoing incentives. It implicates "making" in a larger economic, social and educational program. The mass innovation and entrepreneurship wave are linked to the Internet and the agenda to have a rising economy. From the perspective of the government, university students can become entrepreneurs thanks to the accessibility and therefore their involvement into makerspaces. On 2nd March 2015, the government publishes suggestions on developing makerspaces and promotion innovation and entrepreneurship (Liu 2015) marking the beginning of the mass innovation and entrepreneurship trend with the aim to accelerating the pace of building makerspaces, lower the barrier to innovation and entrepreneurship, encourage scientific talents and university graduates to start businesses, support public services for innovation and entrepreneurship, enhance funding support, improve mechanism of investment and financing and enrich activities of innovation and entrepreneurship. Most of the policies mentioned earlier use the concept of "mass innovation space" which leads to an innovation boost and a reduction of unemployment rates.

I think in 2014-13, China's economy wasn't looking too good, the GDP and other index and also employment rate was a question. I think of course innovation is one thing that every government should drive but how to drive the innovation and at the same time keep the economy up, I think this is what probably was on their mind, so by encouraging people to run their own business, the unemployment rate would drop because most people would be self-employed. (Interview Amanda, former XinCheJian space manager, manager of Innomaker+, September 2017)

The State Council announced an upgrade of the mass innovation and entrepreneurship campaign in September 2018 reminding that "Innovation is the primary driving force of development and a strategic pillar of the modern economic system. The Chinese government places high importance on innovation and entrepreneurship" (Liang 2018). With 18100 new business registered on an average daily base for the first half of 2018, Li Keqiang stresses the continuous efforts to improve and facilitate entrepreneurship to grow in the country, also with the development of industrial internet. According to the China Daily also reporting on the State Council meeting, China's

economic development mode has shifted from “a high-speed growth stage to a quality-oriented one”, therefore the “double chuang” initiative is on the rise (State Council of PRC 2018).

Internet +, digitalization and sharing economy in 2015

The “Internet +” *Hulianwang+* 互联网+ is a strategy released in March 2015 with the aim to economic success and social integration through economic interwovenness using modern information technologies and specially the Internet. This initiative is also considered as a driving force of Chinese economy supporting producers in their entrepreneurial activities and consumers for their access to goods. The government considers having neglected the service industry while focusing on manufacturing industry and the Internet+ may therefore be an influential revolution being the core of production in the information era. The Internet is a driver for economic stimulation including accessibility, consumption and information sharing. Advanced digitalization will support the growth of small entrepreneurship and help SOE’s to reform from a material based industry to a digital one (Keane 2016b: 69).



FIGURE 41:

Chinese entrepreneurial innovation thanks to the development of the Internet - Xinhua News - Xu Jun screenshot © author (June 2019)

Source: Central Government Portal 中央政府门户网站 (2015)

The Internet is a connecting tool and a vibrant place to exchange. It is at the same time a place of control and sophisticated online censorship (Fan 2012) as well as a place of piracy and fake news (Lazer et al. 2018: 1094). Nevertheless, the Chinese government, with its digital development strategy, has endorsed the idea of the “sharing economy” supporting the generation

of online applications, apps, to help support a better access to vital services. The online platformization of entrepreneurial elite is part of the planned economic growth of the Chinese State:

“Internet+” complements the “Mass Entrepreneurship” strategy in the sense that the prosperous digital economy provides opportunities for grassroots individuals to find employment and become entrepreneurs (Lin & de Kloet 2019: 3).

The concept of sharing envisages a shift from inefficient energy consuming state-owned enterprises to people-powered enterprises. 600 Chinese million people participated in the sharing economy⁴⁰ in 2016 and that sharing economy platforms have created 5.85 million jobs, up to 850'000 on a yearly basis (Zhong 2017). The report projected that the sharing economy would contribute 10 percent of GDP by 2020. (Xinhua 2017). Moreover, the government's support of the apps industry facilitates start-ups to develop and encourages foreign high technology startups to come to China and collaborate. The ethos of sharing in China does engender economic diversity: “The sharing economy provides a very direct way for urban citizens to imagine alternative urban lifestyles. The growing number of commercial and social practices and experiments using sharing economy business models are affecting urban economies and lifestyles on an increasingly deep and large scale” (Lan et al. 2017: 1). In his investigation on the connection between Internet+ and China's successful digital companies, Keane also mentions a key challenge faced by the Chinese government, namely copycat: “While technological convergence is undoubtedly changing China, policy makers are yet to really grasp its significance. Businesses are struggling with change and the task of managing intellectual property in rapidly moving digital sectors”(Keane 2016b: 72). Part of this intellectual property struggle, the informal copying practices' narrative of *Shanzhai* are discussed.

SHANZHAI

Shanzhai *shanzhai* 山寨 - literally means mountain hideout and is originally used to refer to a bandit stronghold outside government control or a place for fighters of a corrupt regime - is the Chinese neologism for fake and is associated with illegality and counterfeits.

⁴⁰ The report did not specify if these numbers applied to overseas Chinese but one senses that the influx of overseas technology capital is crucial.

The narrative twist

The narratives around makers, policies and cities have evolved with the governmental interest for an innovation-driven economy with the facilitation of entrepreneurship and briefly makerspaces, the change in manufacturing industry and therefore of global image from a cheap massive industry to a quality high-end one. Shanzhai is an illustrative example of the changes of narratives in which national entrepreneurship and creativity are praised and the image of cheap manufacturing has suddenly been romanticized.

There are now also expressions such as shanzhaism, shanzhai spirit and shanzhai culture which has been both decried by authorities and celebrated by grassroots communities as the first despite a positivation in narrative is fighting the phenomena and the second for the ingenuity and the Chineseness of these hacks (Yang 2016: 27, 2016: 79). The term Shanzhai is widespread in China and began as an informal response to the outsourcing of electrical component manufacturing in southern China. Thanks to the shaped and voluntary changed of narrative from the government's innovation agenda, its rehabilitation has cleared space in policy discourse for terms such as "creative economy" and "digital creative industries" (Keane 2016a). At the same time, the shanzhai phenomenon was a hot topic of the National People's Congress in Beijing in 2009 between the defendants of it advocating for tolerance owing to its innovation capacity while others rather condemned the cheap counterfeits violating consumer rights (Keane & Zhao 2012: 227). From its negative and dark understanding, it has now reached a rather positive interpretation on the international scene accompanied by all kind of shanzhai products: mobile phones, digital cameras, wine, medicine, movies and more.

Actually, these products are not crude forgeries, they are adaptive products developed in context of smart survival and need to develop an economy. Phones were the first known Shanzhai production. In 2018, it was estimated that 80 million Shanzhai phones were produced in China, which constitutes around 20% of the local market (Chase 2009) According to Chase, half of the production is exported to emerging markets such as Brazil, India and Russia. Nevertheless, Shanzhai is not limited to improved mainstream products, it also contains a certain level of humor as it is considered as a "manifestation of pursuing individuality and a mockery of mainstream culture" with its "anti-authority, anti-monopoly, and anti-elite" statement. (Leng & Zhang 2011: 86).

Illustrated by the artistic work of "Shanzhai Archaeology" (Renaud et al. 2020), the images below represent the original ideas of shanzhai phones and their many shapes:

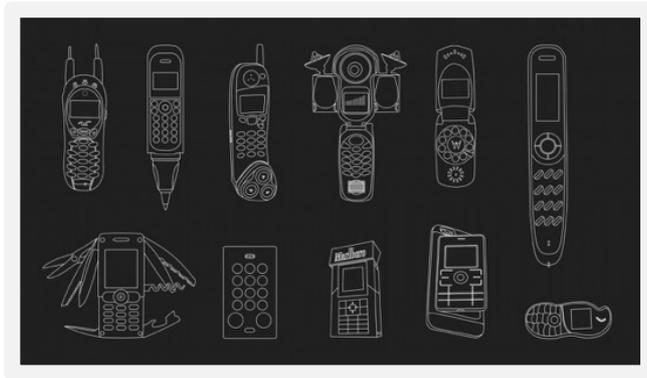


FIGURE 42:

Shanzhai phones by Shanzhai archaeology
 © Renaud, Qu & Disnovation (2019)

Reproduced with the kind permission of Renaud & Qu



37. Shanzhai phones at exhibition of Shanzhai Archeology, Geneva (May 2017) © author



FIGURE 43:

Made in China / Shanzhai
 © Creative Commons Credit: Tricia Wang (2012)

Reproduced according to the Creative Commons Credit (June 2019)

The Shanzhai phenomenon was the start of the change of narrative from *made in China*, reminding the cheap mass manufacturing industry, to *created in China*, underlining the creative aspect of local entrepreneurs. The government is interested to launch initiatives and foster policies favorable for grassroots-level innovation on a higher level. Shanzhai is an opportunity to open this door:

Compared to the top-down, state-supervised cultural clusters that now promote a more open China, shanzhai culture is perhaps a new prototype for an innovative nation even despite its ongoing renegade status and intellectual property violations. In effect, shanzhai epitomizes a distinctive model of Web 2.0 innovation, where open sharing is the foundation of social transformation (Keane & Zhao 2012: 228).

Makerspaces, hackerspaces and other creative spaces flirt with the concept of “Shanzhai” – they can potentially embody it - and give a new identity to Chinese innovation, moving from copying to making and creating (Lindtner & Li 2012: 18–22). Adding to this thought, Gu and Shea connect the maker culture to Shanzhai explaining that the first has been effective for three reasons: it legitimizes shanzhai industries by “emphasizing their disruptive power in relation to established global mobile phone markets”; it accentuates the grassroots Do-It-Yourself (DIY) entrepreneurialism of shanzhai and evokes a unique Chinese ingenuity (Shea & Xin 2018: 81) a term developed by Chubb, fellow at the Columbia-Harvard Program on China and the World: “On the consumption side, the shanzhai identity’s attraction is shown to involve a combination of ingenuity, Chineseness, independence, marginality, playfulness and ambivalence” (Chubb 2015: 27).

A product that took 12 to 18 months for a Western company to bring to market might take only four to six weeks within the shanzhai ecosystem. It was common for Western companies that announced a new gadget to find shanzhai versions of it on the shelves before they could put it on sale themselves. Many early shanzhai successes were copies of popular phones by brands including Nokia, Samsung, and Apple (An & Chipchase 2018).

The shanzhai phenomenon, a romanticization – on one hand to value inventiveness and the work of an industrial era, and on the other hand to gain international recognition for it - of alternative products is part of a deeper industrial and social transformation, a shift in the narrative of production part of the liminal phase in which China stands at the moment. Not only is the industrial context changing, also the empowerment of people is essential as well as a focus on their own needs.

China's Van Gogh

"China's Van Gogh"⁴¹ is a reportage-movie from 2016 which shows the lives of painters in the creative cluster, and urban village, of Shenzhen called Dafen. It is the largest handmade oil painting production in the world with migrant painters (Wong 2014) with over 500 wall studios organized in the cluster as explained by Siyu Chen, Chinese researcher at the Faculty of Humanities of the University of Amsterdam, in her field notes (Chen 2018). Showing Dafen's reality brings a disruptive image on creative mass culture, working conditions, dedication and also shock between realities. It is also bringing a reflection copycat, agency, skilled labor and artists.



38. Dafen, Shenzhen (March 2018) © author

⁴¹ Trailer available at <https://chinasvangoghs.com> (last accessed 31 July 2019)

The documentary is defined by their directors, Haibo and Kiki Tianqi Yu, in the following way:

Until 1989, the village of Dafen in the city of Shenzhen, China was little more than a hamlet. It now has a population of 10,000, including hundreds of peasants-turned oil painters. In the many studios, and even in the alleyways, Dafen's painters turn out thousands of replicas of world-famous Western paintings. Nobody thinks anything of an order for 200 Van Goghs. To meet their deadlines, painters sleep on the floor between clotheslines strung with masterpieces. In 2015, the turnover in painting sales was over \$65 million (Yu 2016).

The documentary follows the life and dreams of a Dafen painter. His mass production of copies of Van Gogh's paintings are not soulless, he is dedicated and fascinated by the master. A similarity drawn between the first documentary discussed above "the Chinese Recipe" and this one, is challenging the negative pre-conception of the counterfeit culture. Protagonists of both documentaries mention the cultural understanding and difference of what copying means. In China, copying is also a way to show respect.

In ancient Chinese artistic practice, learning takes places specifically through copying. Moreover, copying is considered a sign of respect toward the master. One studies, praises, and admires a work by copying it. Copying is the same as praising (Byung-Chul 2017: 15).

Thanks, and with the documentary, the painter travels to the Netherlands, realizes his dream of visiting its museum and is confronted to an unexpected reality – the prices of the paintings he sold were unexpectedly high in the souvenir shop he sells them to. His work is not recognized.

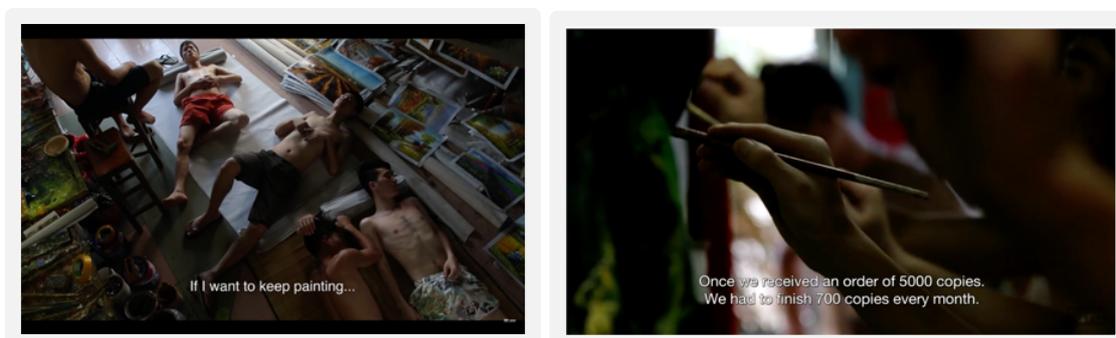


FIGURE 44:

Screenshots of China Van Gogh's documentary
screenshot ©author (June 2019)

Source: www.chinavangoghs.com

EXCLUSIVITY, ELITISM, SOLUTIONISM

The maker culture allows individual, public, private, communal structures to appear and to offer shared working spaces with access to tools for manual projects. Is it really accessible? Is it elitist? Or anarchist? Why is the Chinese government interested in this culture? This sub-chapter is born from a discussion at the end of the author's presentation at the Chinese Internet Research Conference (CIRC) in Leiden in 2018. One of the rather strong remark of a frustrated public member was:

You didn't convince me! Innovation doesn't exist in China and the makerspaces are just places of anarchists!!" Such was the reaction of a retired engineer at Philips to our discussion on makerspaces (CIRC, May 2018). He added to it that he had experienced real innovation in his youth.

From the fieldwork experiences, makerspaces in China are clearly not anarchic. There are places of tinkering, self-developed projects and potentially innovation depending on their results. Nevertheless, I consider the innovation not especially in the products which could be marketized but in the renewal of work space and organization, in the freedom taken to follow a personal idea or project with a government attentive and reactive to their emergence. Bin Huang, professor at a Chinese governmental research facility, asked after my presentation at the World Humanities Conference 2017 in Liège for a feedback on the positive impact of the government's initiative. The Chinese government's aim was to create new spaces for new types of economic activities to emerge. The production of new products was not the objective per se. Makerspaces are about democratization of knowledge, open accessibility and freedom, but are they?

Accessibility

Makerspaces are, in spirit, accessible to everyone. They often are affordable, open to newcomers with or without skills, and have very flexible opening hours. Yet are they actually accessible?

An American assistant professor in the Department of Media, Cognition and Communication in Copenhagen, Denmark, writes in her book "Hackerspaces: Making the Maker Movement", which is based on the global or American maker culture, that there are no requirements to be a maker or a hacker expect showing agency and interest but at the same time there is a "sense of being an elite subculture" as she further explains:

Community is central, I argued, but there are also satisfactions relating to being part of an elite group, a specialized subculture that sees itself as more wide-awake than society as a whole (Davies 2017: 146)

The challenge of penetrating this sub-culture was also present in my research. With no skills in electronic or specialized knowledge, it would have been hard to join a robot competition or a drone evening. For that reason, I explored several projects and visited several places to find one to fit in.

When it comes to China, Shea and Xin criticize the idea of egalitarianism by citing David Li who stipulates that not everybody can have access to these spaces and “[...] alludes to the reality that the “next level” is a complex mix of combination of knowledge, networks, empowerment, action, and capital” (Shea & Xin 2018: 86). Hacking is a form of privilege that not everyone can benefit from. As Jade, the space manager of XinFab, mentioned during an interview, “if you are a migrant worker in Shanghai for example, you will neither have time, nor money to do something like that” (Interview Jade, XinFab manager, March 2018). The table below compares the monthly fee of XinCheJian and XinFab in Shanghai, Atelier Fab Lab and x.factory as of October 2019 without any special discount or offer with an estimation of the monthly income wage in Shanghai, Shenzhen and Beijing according to Forbes in 2017. An estimation of a median salary, as here, masks the income discrepancy and inequality of cities alike. China Briefing, a private magazine, writes that in October 2019, the minimum wages are CNY 2’480 (USD 358) in Shanghai, and CNY 2’200 (USD 318) in Shenzhen and Beijing (Chipman Koty & Zhou 2019). Migrant workers (without the urban hukou) are often missing in these statistics or calculations. Hence, even if the numbers shown in the table below indicate an affordability of makerspaces, my fieldwork and insufficient information about Chinese urban inequalities question this accessibility.

	Monthly fee (CNY)	Monthly fee (EUR) (as of 11.10.19)	Monthly fee (EUR) (as of 11.10.19)
XinCheJian	200	29.3	28
XinFab	180	23	14
Atelier FabLab	800	118.4	112
x.factory	600-1500	84.6-211.6	84.6-191.6
Median monthly wage Shanghai (Forbes 2017) (USD)	Median monthly wage Shenzhen (Forbes 2017) (USD)	Median monthly wage Beijing (Forbes 2017) (USD)	
1135	938	983	

FIGURE 45:

Comparative table of membership fees of four makerspaces in China and median monthly income in Shanghai, Shenzhen and Beijing according to Forbes (2017)

©author (December 2019)

The access to makerspaces for the wider population is also limited due to population's stratification in terms of knowledge, information, time, income, and interest⁴². Getting to the next level, as Li explains in Shea and Gu, shows that even a smaller portion of the already knowledgeable makers will be able to create more and better projects. This elitism creates a form of marginality of the movement or, as Maxigas and Troxler write, "fringe phenomena" (Troxler & Maxigas 2014).

This selectivity is not fully restrictive though, there are communication and management positions in makerspaces such as the one of Chris, former manager of XinCheJian, with a background in finance; Amanda, former manager of XinCheJian with a background in languages; Kevin, former XinCheJian member, with a background in international political economy; Vicky, community manager at Shenzhen Open Innovation Lab and Vicky, community manager at x.factory both with backgrounds in languages. There are also non-technical projects linked to art or with members coming from the artistic sectors such as Lu Feng, a member of XinCheJian, or Freda, former manager of XinCheJian.

Elitism or solutionism?

The understanding of the openness and limitedness of makerspaces in terms of accessibility does not change the path and lifestyle of the makers. Makers are on a liminal path of self-development, social change and national transformation. They are part of a marginal, ephemeral and liminal culture or group with a potential positive impact for themselves, the society or the country on personal, economic and systemic levels. As Wang Jing mentions, the Chinese government has not been blind to it:

Whether we are speaking of maker entrepreneurs or makers as change-making citizens, it is obvious that the government has discovered the value of the individual, creative expression and grassroots energy in transforming Chinese economy and society' (Wang 2016: 59)

The Chinese government, has in its 2015 political strategies recognized the need of individuals, such as makers, creating a new form of entrepreneur-elite. This understanding of elite reminds of the work of Joel Andreas published in his book "Rise of the Red Engineers: The Cultural Revolution and the Origins of China" explaining that "red engineers" are ruling China nowadays and have been trained with the vision of being part of an enlightened group which would govern society and participate to its economic transformation:

⁴² During the time of the project, the author / I have exchanged with and spoken to an important amount of people in China, and globally. Rarely, someone had any idea of what a makerspace/hackerspace is. I have therefore rather introduced the topic than learned about it in general. It is in specific events and places only that the exchange could be on the makers.

The class of Red experts, which consolidated its position at the top of Chinese society in the 1980s is being transformed [...]. Many Red and expert cadres, [...], have converted themselves into successful entrepreneurs (Andreas 2009: 251).

Is the co-optation of the maker movement in China a move towards a new type of red engineer more adapted to the current world and context? The risk of the co-optation of elites which are not trained by the system is that they will be more independent and less interested in serving the nation as expected:

The co-optation of new elites is a classic strategy of adaptation for Leninist parties and for organizations in general, but it is a risky strategy. As the case of the CCP shows, co-opted elites may not support or even sympathize with party traditions. The technocrats and entrepreneurs who are now being courted were previously targeted as class enemies. Even though the newly co-opted technocrats and entrepreneurs are unlikely to initiate pressures for democratizing reforms, they may be powerful allies if others inside and outside the party do so. The attention given to co-opting new elites and promoting economic reforms has also led to deterioration of traditional party building, leaving the party less able to mobilize and control society and its own members at a time of increasing political, economic, and social change (Dickson 2000: 539).

Makerspaces are terrains of opportunities which were supported or even instrumentalized by the Chinese government. The spaces seem to be a place for a new techno-entrepreneurial elite (Graezer Bideau 2018; Hoffman 2010). Nevertheless, even if the people who are part of the maker culture in China are well-educated, young and ambitious, it doesn't limit them and their lifepaths to the government's influence. Is the Chinese government really interested in the maker movement itself? According to Amanda, the Chinese government experiment to support makerspaces has a pragmatic economic reason:

*A: The government is not really supporting makerspaces; the government supports **innovation** and they want results. So, at the very beginning, in the years 2013-14, the government didn't know what to do with makerspaces, it's a new concept. The whole trend is new to them, so they were overwhelmed. The only thing they do have is money, so they give. There are so many makerspaces, they need money from us. Every makerspace or incubator is not easy to sustain or operate, the government needs to support with some money, then the government just started to give money. **It turns out many makerspaces were set up just to get the money from the government.** The government got aware of it and they learned, evolved, and changed the policy. If you do your thing first properly, you show us result, we will give you compensation based on your performance. I think it is a good strategy. You need to prove that you have a business that can survive. You need more support to become more productive.*

M: What is the aim of the government?

A: I think the central government they manage the whole country for a reason, they are very smart people. They wouldn't do things without reason. There are very deep intentions in everything they do, every step they take. I think in 2014-13, China's economy wasn't looking too good, the GDP and other index and also employment rate was a question. [...] if you're a start-up, you can't do things on your own, you need a team, so you will hire people, it creates more jobs. So, imagine this, if you are a big company, or medium size company, you probably hire 500 or 1000 people, that's it. But to encourage start-ups to run their own business I think millions of new start-ups emerge, and each start-up hires at least 5 people, that's hundreds of

millions and some of them eventually will succeed. The majority will die because either the product was not good enough, the team was good enough or the market is not ready or whatever reason is, the majority will die or maybe the investors didn't see the potential or they didn't get the funding. Anyways, 99% will probably might die but 1% of it will survive and will grow big. So, some of the start-ups that graduated from Innospace+ are now hiring a thousand people, have offices in different cities – just in 2-3 years (Interview Amanda, former XinCheJian space manager, manager of Innomaker+, September 2017).

Innovation, one of the priorities of the 13th 5-year plan of the Chinese government leads the country to experiment and find new solutions for its economic development. Makerspaces, seemed to be just in time to China's ambitious aim to be Makerspaces are terrains of be an 'innovative nation' *chuangxin xing guojia* 创新型国家 with a strong belief in the power of the Internet:

The digitization of China's cultural resources together with the belief that digital start-ups will kick-start China's 'indigenous innovation' capacity is part of the development agenda underpinning the announcement of the digital creative industries. (Keane & Chen 2017: 5).

This ideology carries the digital development and incentive but technology and infrastructure are not panaceas even if it presented this way by the government. In the 80s, China's government "began to construct an elaborate social-systems apparatus designed to "engineer" the nation's rise by transforming China's backward masses into a scientifically normalized, modern, modern society fitting of a global power [...] "(Greenhalgh 2010: 37). Recalling these past strategies, China is nowadays experimenting with initiatives and policies with a focus on the development and spreading of the Internet as well as the innovation of the country. To share these initiatives to the wider public, communication on the Internet is an essential tool. The next three images are screenshots of newspapers which show the importance of the heroic *chuangke* / entrepreneur / maker. The first, published in 2015 with the title "The next decade is the world of the *chuangke* / maker / entrepreneur", shows a young man who recently graduated and is a superman called *chuangke* with a flag made of a pen and fabric with *chuangxin* innovation written on it. The *chuangke* superman comes out of a screen with his knowledge of innovation flag to possibly save the world. He is observed by five young men looking up to him and following his move. The article mentions that the being a maker is not something from today but that it was very trendy since 2014 and is part of the current economic word. The second image, published in 2016 with the title "Rising while the wind blows", also has the protagonist wear a T-shirt with *chuangke* / entrepreneur / maker on it. His self-made wings with *chuangye*, which means do a pioneering work, start and undertaking, and *chuangxin* meaning innovation inscribed on it allow him to happily fly with the wind of the Internet. The newspaper mentions the 13th 5-year plan and the Internet + policy. The third drawing presented here appeared in the Hunan Daily in 2017 with the title: "Let Innovation drive the industrial transformation and upgrading". It shows a young man flying on a red arrow which has Chinese economy written on it with wings of innovation and the drive / driving force. The young man flies toward the sun.



职场 须知：未来十年是创客的天下

毫无疑问，创客是时下最炙手可热的一个群体。从2014年下半年以来，“创客”也成为国内商业媒体中刷屏最多的关键词之一。张瑞敏在《致创客的一封信》中写道：“时代列车转入一个新的轨道，‘零距离’、‘去中心化’、‘分步式’的互联网思维把我们带进一个充满生机与挑战的人人时代，一个人人创客的时代。”

是的，一个被时代催生起来的hr369.com特殊群体——创客，正悄然崛起。

追溯起来，创客并不是今天才有的。

“创客 (Maker)”一词最早来源于科利·多克托罗 (Cory Doctorow) 的一部科幻小说的名字。他在书中写道：“通用电气、通用磨坊以及通用汽车等大公司的时代已经终结。桌面上的钱就像小小的磷虾：无数的创业机会等待着有创意的聪明人去发现、去探索。”科利·多克托罗的描述，给了美国《连线》杂志前主编克里斯·安德森 (Chris Anderson) 以灵感，让他写出了名为《创客，新工业革命》的畅销书。他在该书中描述的“创客”，是不以盈利为目标，努力把各种创意转变为现实的人。

FIGURE 46:

未来十年是创客的天下 – The next decade is the world of the chuankke entrepreneurs (Xinhua 2015)
screenshot ©author (June 2019)

Source: <http://zhichang.hr369.com/dongtai/201507/178202.html> (dead link)



乘风而起

全国平均每天诞生1.2万家公司。

“十三五”规划纲要草案提出,要深入推进大众创业万众创新,鼓励各类主体开发新技术、新产品、新业态、新模式,打造

发展新引擎。

“互联网是巨大的‘风口’”“从‘跟风者’变成引领者,国家才会站在产业链顶端”……新的时代坐标上,“风口”的风来自哪里,又吹向何方?

本版未署名稿件据新华社

FIGURE 47:

乘风而起 – Ride the wind (Xinhua 2016b)
screenshot ©author (June 2019)

Source : http://www.cnepaper.com/yqwb/html/2016-03/15/content_4_6.htm



FIGURE 48:

让创新驱动引领产业转型升级 – Let innovation lead the industrial transformation and upgrading (Liu 2017)

screenshot ©author (June 2019)

Source: <http://www.rmzxb.com.cn/c/2017-12-08/1894771.shtml>

The economic solution that makers/entrepreneurs would provide or the idea of the maker/entrepreneur with impact for the whole society seems to be limited to men in these three images. In the field, makerspaces are not limited to men but nevertheless more men than women are members of the makerspaces visited⁴³. Toupin, researcher at the Department of Art History and Communication Studies at McGill University in Canada, and who worked on the practices of exclusion interviewed several maker women who opened their own spaces, writes:

Their powerful rearticulation of open sociality marked a historical fork in the movement which stimulated reflection on liberalisms on both sides, and politicised issues of gatekeeping which many kept purely technical before. Moreover, the meeting of feminist and geek cultures proved to be a fertile ground for cross-pollination while we are reminded that hackerspaces are not open (Toupin 2014).

Davies as well dedicates a chapter to “Exclusion – Whatever It Is Females Like to Talk About”. During my fieldwork in China, three elements linked to women and feminism have been observed. The first is the existence of Q-space, which is a feminist LGBTQ+ makerspace based in Beijing. This makerspace has a Chinese and international community. Q-space is a community which organizes meetings and art events, which has become a makerspace through one of its members at a given time and was encouraged, as explained in Chapter 2, to define itself a makerspace. Contrarily to the examples given by Davies or Toupin, Q-space was not founded in reaction to existing male-dominant makerspaces. The community initiative has taken shape of an alternative type of makerspace through its members and supporters. The second element, which is interesting to notice is that most of the makerspaces are managed by Chinese women. Their backgrounds are various and they have developed refined knowledge of the spaces or communities they manage, their communities and the projects they may be involved in such as Freda (XinCheJian), Vicky (SZOIL), Violet (x.factory), Amanda (XinCheJian, Innomaker+), Chris (XinCheJian, Chinaccelerator), Jo (Q-space) or Lit Liao (Litchee lab). Lit Liao, the founder and manager of Litchee Lab is an exception with a background in electronics engineering. Several of the others mentioned above have developed technical skills through the environment they are part of and for example through the Fab Academy, which is the case of Vicky and Violet. The third element, is the outreach of “Sexy Cyborg”, Naomi Wu who voiced her frustration reporting “The maker community is for privileged white people” (Ferreira 2017) or wanting to change the sexist tech scene. She later made the cover of Make Magazine in February/March 2018 after Dale Dougherty apologized for his tweet where he doubted her being a fake maker. This edition had a special chapter on Makers of Shenzhen (Senese 2018). Reactions to her outvoiced criticism have been received very differently. Of the maker communities’ part of the research, very few seem to have followed the story. The reactions I have collected were rather surprised or uncomprehensive. While some perceived her as a bully, a fake, a provoker; others recognized her uniqueness and her great skills in technology.

In general, makers in China are gender and nationality diverse. There are more male than female makers, but many pivot people are female. The fieldwork I conducted showed openness.

⁴³ I never felt out of place for being a woman – neither did the women I interviewed.

The Chinese recipe?

The “Chinese recipe: Bold and Smart” is a documentary by Jürg Neuenschwander in 2016. It is at the heart of the culture of making in China. The documentary shows a smart and successful Chinese youth, fascinated by electronics and robotics, wishing to democratize technology, building a team and a project, which they also manage boldly to bring their project from China to San Francisco and catch the attention of the famous Anderson, former chief editor of WIRED, author of “Makers: the new industrial revolution”, who was not initially interested in them. The quality of the reportage nourished by interviews and shared experiences challenges the idea of Chinese copycat understand and underlines the smart sparkling young makers of China. By default, the reportage also shows, without further explaining, the challenge of the international exchange effort. One of the teammates whose nationality is not mentioned, is denied the visa for the USA. Going to the USA is represented in the documentary as a great success for the team and their product development. The fluidity of connectivity is limited by physical borders but the message is set on the ingenuity of young Chinese, the transformation of narratives around technology, making, producing and a renewal in the understanding of “made in China”. It also brings this empowered youth at the center of China’s innovation.



FIGURE 49:

Chinese recipe film poster (2016)
screenshot ©author (June 2019)

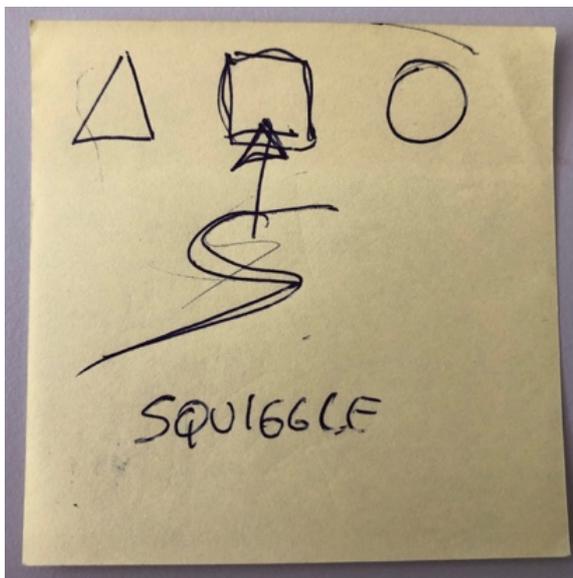
Source : www.thechineserecipe-movie.com

PEOPLE, PROJECTS & OBJECTS

Despite the interest of the Chinese government for makerspaces during a short time, makers are mainly focusing on their own project and on how to maintain their communities. There is a pragmatic approach to project with a priority on how to bring an idea from zero to a project and if it doesn't work to start another one. A project can be the result of a professional or personal need, an ideal, a curiosity, a business idea, a dream and more.

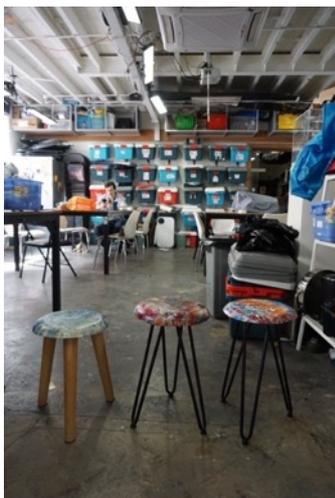
Experimenting: from ideas to realizations

The advantage of working on makerspaces in China is the enriching path it brings to. Not only are the people who are part of this culture interesting, also are they often open and willing to share about what they do. The makers met on the path of this research have come to makerspaces by chance – if someone brought them there, took them with them – intentionally – they clearly looked for the type of space provided – or by curiosity – they heard of it and wanted to see what it is. A makerspace is a place where experimentation – which means success and failure – are welcome as it is the place for it. Knowledge sharing is a purpose through workshops but workshops are not the purpose of most of the makerspaces. Talking about one's project is part of the ecosystem; it is often the best way to move it forward. One example of it from which I kept the trace of the post-it was a discussion with an engineer/teacher/maker who created squiggle labs. To understand what he really works on, he used a post-it on which he explained to me that not everyone fits into the given shapes of triangle, square or circle but correspond to the squiggle – the shape which is flexible and unique.



39. Squiggle post-it – drawing of a maker to explain his project to the author (September 2017)
© author

This explanation happened in one of the first encounters I had at XinCheJian and set the frame of the research. Makers are for squiggles and many squiggle projects happen in this context. Despite the institutionalizing effort of the government – which also means the unsquiggle of the culture – the tinkering, experimenting, prototyping has not disappeared. The chaotic aspect of the makerspace is part of its world. Some makerspaces and its members focus more on the cleanliness and care for tools than others. A fascinating element of this kind of research is the many objects, projects and ideas at different stages of realization. The following pictures show a few ongoing projects collected in the makerspaces in 2017-2018.



40. Precious Plastic projects at XinCheJian, Shanghai (October 2017, March 2018, May 2019)

© author



41. Diverse projects: Helicopter simulator (XinCheJian), urban farming with turkeys (nearby Shanghai), art coding (x.factory), hacked music instruments (Innomaker+), kids' tutorials (Fab Lab Atelier Beijing), Map PCB (Fab Lab 0), Shanghai, Shenzhen and Beijing (September-December 2017, March 2018, March-April 2019) © author

Community and space as experimentation

Not only do experimentations take place in makerspaces, makerspaces are forms of experimentation. Makerspaces have been in the light of media for its innovative aspect but innovation is not mainly in the objects prototyped or produced in these spaces but rather for its rhizomic way of developing projects, the rethinking of workspace and the meaning of work. Not only are makerspaces themselves field of experimentations on all levels, also they are sources of inspiration for new types of spaces to be founded. Former members of XinCheJian for example have created new types of spaces such as for example Innomaker+ by Amanda in Shanghai – former space manager, Coderbunker in Shanghai and later in Singapore by Ricky, co-founder; Shenzhen Open Innovation Lab (SZOIL) and Maker Collider by David Li, co-founder; XinFab by Pablo, former member; Mushroom Cloud by Rockets and Ricky Ye, very first members. As mentioned earlier for XinCheJian, places are all linked like rhizomes as introduced by Deleuze and Guattari: “A rhizome ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances relative to the arts, sciences, and social struggles”(Deleuze & Guattari 1987: 7). Assembling urban settings including and establishing connections between people, spaces and politics are part of an integrative logic of research. Experimentations allow dynamics to take place which are inscribed in the ephemerality, marginality and liminality mentioned earlier. They create an ephemeral net inscribed in each’s path.

CONCLUSION

The multiple aspects of the identity of the makers in China are rooted in a global historicity of the maker culture and a Chinese uniqueness in terms of environment. Makers in China are part of a shift from “made in China” to “created in China” and to “make in China”. Between the ideologies of the state-created makers, and the spaces and state-supported spaces, there is a paradox:

“We want to revive interest in hands-on making among exam-oriented Chinese people and encourage them to think outside the box. We want a makerspace to be a place where everyone can come, create, and communicate. But the central government had loftier ambitions — and a different definition of the concept. To officials, makerspaces weren’t just about hobbyists “learning by doing”; they had the potential to create wealth and jobs, and realize a much-touted policy goal of “mass innovation and entrepreneurship” as Xue reports in his article in Sixth Tone interviewing a Mushroom Cloud member (Xue 2018).

Co-optation has not only provided governmental spaces but has also allowed an interesting alternative, between the original maker project and running start-ups, and has resulted in the platformization of makerspaces oriented towards the international scenes and here represented by SZOIL and x.factory. Part of their main function, in addition to having a workshop with tools to offer, is to welcome groups and individual makers, to connect them to the local ecosystem, to

answer questions and share knowledge online. Some spaces, like Innomaker+ in Shanghai, are closer to incubators than to makerspaces.

Chinese politics, policies and narratives have translated and influenced the meaning of *chuangke*, which has been developed in the context of politics of innovation implemented with various action plans and policies in each city. The Chinese government instrumentalized the maker movement in order to boost the economy. In addition, the fieldwork I conducted shows a more complex and blurred reality. Top-down state and bottom-up grassroots communities interact and exchange. Also, the co-optation initiative by the government has been for some makerspaces an empowering and enabling tool. Initially tinkerers, some of the makers were suddenly recognized as part of an elite with new opportunities to develop their ideas and ideals further.

Transformation strategies of the maker culture can exist in reaction to existing mass consumption and production, or, as well, fit into the niche between the consumer and the producer. I claim that the maker movement is creating new ways of working in China, deconstructing the first, second and third places (Bhabha 1994; Oldenburg 1999; Soja 1996), and going further as emblematic fourth places (Morisson 2018), where all types of places meet.

Initiatives by government and the maker culture have created a wide palette of types of makerspaces. At the same time, the makers who are part of makerspaces do not define themselves as such, while those using *chuangke* are more often entrepreneurs.

The adoption and adaptation of the initiative in each city's concept of its own development, while respecting the national objectives laid down by the State Council, shapes the identity of the maker culture more deeply. In the next chapter, the accent will be put on the Chinese urban fabric and the influence of the cities on makerspaces.

转型中的城市

Zhuangxingzhong de chengshi

In this research, cities are the places where the bottom-up and top-down dynamics of creative and innovative movements, and moments, in China, such as the hacker/maker movement, meet and take shape. Politics and policies may shape the framework and the physical places but not so much the spaces created by the people.

Cities are shaping citizens as much as citizens are shaping cities: "At the same time that individuals are aware of the physical landscape of the city, they are also producing mental spaces of an alternative order within this landscape" (Chen 1995: 349).

Keane explains that, in 2006, creativity was included with innovation in the Chinese government's rhetoric and created some tension: "Internationally, creativity is associated with individualism, with freedom of expression and cultural diversity. Its introduction into the lexicon of government has not been without opposition" (Keane 2011: 1). The government has decided to promote urban development through innovation and creativity, and has defined and limited places for more competitive cities, and to attract more investments and prosperity. As each city develops local strategies and interprets top-down initiatives, unique urban identities emerge as a result.

The concept of makers/makerspaces is, for example, used for entrepreneurship supported by communities, universities, individuals and any other helpful organization. These would all be included in the development of "creative clusters": "The overriding logic for the clustering of media and cultural activities from a national perspective is enhancing soft power and identifying human capital. The fact that clusters might attract creative talent provides a solution to the conundrum of creativity" (Keane 2011: 2). Makerspaces are part of planned creative clusters belonging to the Chinese urban fabric.

This chapter will first introduce the Chinese urban fabric and urban development before focusing on the cities of this research: Shanghai, Shenzhen and Beijing and their uniqueness. Then, maker events will be presented, followed by a reflection about these spaces of the *in-between*.

URBAN FABRIC IN CHINA – A FRAMEWORK

The research project takes place in the context of Chinese cities with its urban dynamics and flexibility of space for creative and liminal encounters. This chapter allows to share a theoretical framework to the urban China. We will start with the notion of the city in general, then urban and creative China, urban imaginaries and finally liminal spaces in the urban context.

Creative China

The concepts of creative cities, creative industries, creative classes, creative hubs or creative milieu are using the positive aspect of creativity, which promotes flexibility and novelty in a chosen framework. But innovation and creativity are not helping cities to shine, they need to be part of the core of their representations: “innovation and creativity are not simple « magic bullets » that can be added to the mix of cities to deliver competitive advantage” (Pratt 2008: 150). According to Robinson, urban geographer, creativity is an objective to reach, which flourishes with the promotion of a “systemic strategy” (Robinson 2011: 12). The concept has, in this case, a role of cultural consumption and production but this understanding underlines several policy dilemmas in the creative city according to Comunian, reader in creative economy at King’s College London: creative class versus creative industries / cultural workers, local values versus global competitiveness in urban regeneration and short-term attraction versus long-term retention policies (Comunian 2011: 1160). “Creative structures” – which englobe clusters - appear in cities: “the emergence of specific structures (..) regulate and inform the environment. These can be identified with creative clusters (Pratt, 2004) and in the development of organic and institutional networks to support and govern the cultural actors and agencies” (Comunian 2011: 1171). Creativity is here an indicator of the competitiveness amongst cities in their urban planning and local/global positioning. Florida has developed a theory in where he divides society into three classes: working class, service class and creative class. The last is economically and culturally dominating and is the one which shapes the cities and their success (Florida 2002: 249). He considers that cities develop through creativity and creative people: “[...] creative people power regional economic growth and these people prefer places that are innovative, diverse, and tolerant (Florida 2003: 8)”. He shares the idea of cities developing through creativity and creative people. Cities with highly developed infrastructure and with a climate stimulating conversation and social networking tend to attract more creatives (Moss 2017: 14). A city can therefore be attractive to an economy driving creative class, with its infrastructure, location and the ecosystem in place.

Nevertheless, the idea of the creative class doesn’t convince all. Peck, Canadian geography professor, who answers to Florida’s theory denouncing these creative strategies as elitist “despite their ritual invocation of grassroots efforts” and fostering “experimental and mutually referential policy development processes” (Peck 2005: 767). The creative class theory is part of an era of urban competitiveness where gentrification is perceived positively but also criticized for

the challenges created to its citizens. Kohn, Canadian professor in politics, explains five harms linked to gentrification: “residential displacement; exclusion; transformation of public, social and commercial space; polarization; and homogenization” (Kohn 2013: 297-310). China is currently focusing on competitive development and acknowledges the creative class. Therefore, this concept resonates in China where building infrastructure is part of shaping new projects (O’Connor & Gu 2006; Zielke & Waibel 2014). Indeed, urban development and its challenges are a political priority and their attractiveness for economic development and growth are central to the government. The framework given by the government with the creation of leisure places such as parks, consumer-oriented streets, malls but also for example innovation parks, innovation labs in universities is to be recognized. These creative clusters form an ecosystem, which could attract creatives and boost the economy. My position here is that, without citizens, users and communities, these spaces, which are deeply linked to uniqueness, novelty and autonomy, have no value. The theory of creative class can have a positive impact for the development of infrastructure for creatives, but is not a panacea for urban economic development, and can harm local populations depending on how it is applied.

Urban imaginaries

The story of makerspaces in China is not about a linear transfer of knowledge and tools from the global maker movement but rather the story of maker communities in China highlighting how tools, technologies and values are sites of appropriation, negotiation, remaking translated into unique settings. The infatuation for makerspaces in China is accompanied by an imaginary in which dreams can come true thanks to a specific place or city.

Cities and their urban imaginary can also be the place where better life quality can be reached and become an objective to reach. The Chinese government is aligned with the urban imaginary as one of a National People’s Congress (NPC) report of 2003 is named: “Urbanization makes China Dream coming true” and says the following.

“To live like a townsman” has always been the dream of farmers for generations. Since the establishment of New China especially after the reform and opening-up movement, tens of millions of farmers have migrated into cities, living a city life. Migration into cities is not a spontaneous choice. As the national economy develops, factories and service industries are in great need labor forces. At the same time, large numbers of rural labor surplus were freed from once-labor- intensive agriculture sector due to continuous technological progress (NPC 2013).

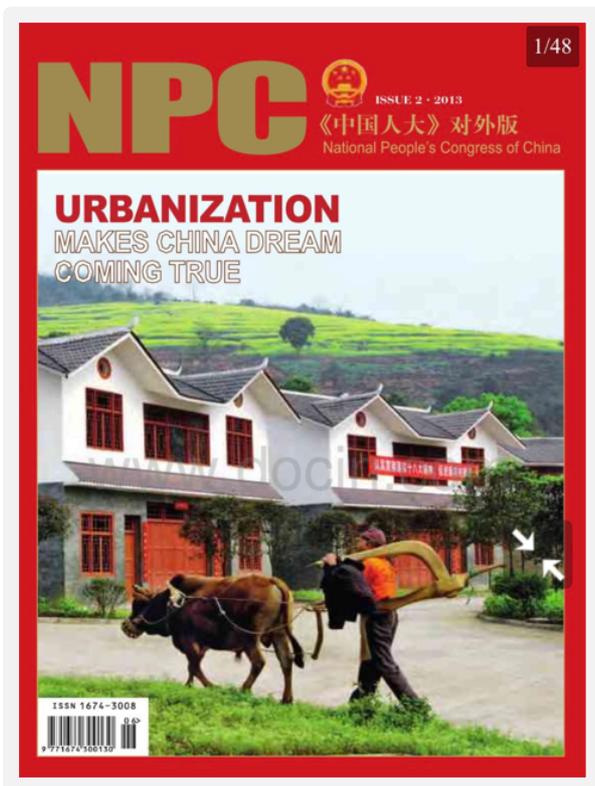


FIGURE 50:

National People's Congress of China cover, Issue 2, 2013
screenshot ©author (February 2019)

Source : <http://www.npc.gov.cn/>

The China Dream *zhongguomeng* 中国梦 is the realization of the great rejuvenation of the Chinese nation, "which is the greatest dream of the Chinese nation since modern times" which will be realized as President Xi Jinping has announced.

“中国梦”的核心目标也可以概括为“两个一百年”的目标，也就是：到2021年中国共产党成立100周年和2049年中华人民共和国成立100周年时，逐步并最终顺利实现中华民族的伟大复兴，具体表现是国家富强、民族振兴、人民幸福，实现途径是走中国特色的社会主义道路、坚持中国特色社会主义理论体系、弘扬民族精神、凝聚中国力量，实施手段是政治、经济、文化、社会、生态文明五位一体建设 (Shen 2017)。

The core goal of the "Chinese Dream" can also be summarized as the goal of "two hundred years", that is, by the 100th anniversary of the founding of the Communist Party of China in 2021 and the 100th anniversary of the founding of the People's Republic of China in 2049, the Chinese nation will gradually and eventually be successfully realized. The great rejuvenation is manifested in the prosperity of the country, the rejuvenation of the nation, and the happiness of the people. The way to achieve it is to take the socialist road with Chinese characteristics, adhere to the theoretical system of socialism with Chinese characteristics, carry forward the

national spirit, and unite China's strength. The means of implementation are politics, economy, and the five-in-one construction of culture, society and ecological civilization (author's translation).

If economic prosperity and individual happiness is expressed by having a partner, a house, good education, access to goods and services, this dream will happen in an urban area as the cover page of the National People's Congress of China shows "Urbanization makes China dream come true"(National People's Congress of China 2013) and the China dream is the successful realization of the nation (see extract above). According to Taylor, Professor of Political Science and Chair of the Department of Political Science and Geography at the University of Texas in the USA, the China Dream is an urban dream: "Presuming that the National New-Type Urbanization Plan is successfully brought to fruition, urbanization will drive China's domestic economic growth and consumption for the next decade and beyond, maintain social harmony, preserve the primacy of the CPC, and fundamentally change the face of the nation (Taylor 2015: 111–112). Cities, as technical and technological realizations, embody the exchange process between people, their actions and the environment – they are an assemblage. Space evolves according to representations. Adapting, adjusting and negotiating the sites of making and urban being creates the urban reality, between imaginary and real. The urban imaginary built from the Chinese Dream accompanying the narratives on the nation of innovation has also reached a wider audience (see Chapter 6).

The urban "dream narrative" is also part of the urban imaginary and the way cities built up their own narratives. Beijing (since 2012) Shanghai (2010) and Shenzhen (2008) are recognized as cities of design and are part of the creative city network of the United Nations Educational, Scientific and Cultural Organization (UNESCO). The UNESCO Creative Cities Network (UCNN), with on its homepage a video starting with images of Shenzhen, was created in 2004 and counts a network of 180 cities working for sustainable urban development with creativity and cultural industries as a strategic factor. Shenzhen is also one of the twenty-eight Fab Cities which "work towards producing everything they consume by 2054". Shenzhen is an exception as its production and export largely overtake its consumption. Fab City applies the ideology developed in Fab Lab where cities work across multiple layers of deployment and practice, "scaling the Fab Lab approach to a city and systems level". Shenzhen is special here, as a new city, it is positioning itself as a city of the future. As Bach, political scientist and Associate Professor of Global Studies at The New School in the USA, explains:

From the very beginning, Shenzhen was to fulfill [its] function [...] as a model for the rest of China and as an example for the rest of the world to see China's capability and commitment to reform. (Bach 2017: 29).

These reforms are important on a national level with economic and socio-cultural transformations as well as on the international level with its image. The narratives of development and innovation play an important role here. China needs to be perceived as a successful, powerful and innovative place and this transformation also starts with its heavily industrial city, Shenzhen.

Creative city: Bottom-up and top-down entanglements

The “maker culture imaginaries” are shaped by people – maker, entrepreneurs, researchers, political figurers – and institutions – companies, governments, makerspaces, magazines, both in their own ways.

In his research, Capdevila, a Canadian Assistant Professor in Paris with a PhD on Makers and the dynamics of innovation in Barcelona, analyzes the creative city through the bottom-up and top-down dynamics. A bottom-up approach takes into consideration initiatives taken organically by autonomous individuals or grassroot communities outside organizational structures. Bottom-up initiatives can grow up, establish themselves and gain the interest of organizations. A top-down perspective is a governmental or hierarchical high structure which incentives are given to the lower levels. These initiatives are usually realized under the guidance and authority of higher instances. Capdevila considers the differentiation between the two dynamics as “relative to the actors that are at the origin of the innovation processes and to the actors to which the initiative is directed”. There are ontological and organizational aspects to his table of types of spaces showing the type of governance and the innovative approach used by the makerspaces.

		Innovative approach	
		Exploration	Exploitation
Type of governance	Top-down	Fab Labs	Living Labs Labs enterprise
	Bottom-up	Hackerspaces	Co-working spaces

FIGURE 51:

Types of spaces of collective innovation by type of governance and innovative approach
©author (October 2019)

Redrawn based on Capdevila (2017)

The innovative approach called “exploration” brings the Fab Labs and hackerspaces together, both having the aim to democratize technology by learning and sharing, and focusing on teaching and tinkering. Fab Labs’ type of governance is organized, the name is franchised, and the Fab Labs have to follow the rules given by the head organization. Hackerspaces are freer; the organization type can be inspired by other spaces but will exist according to the consensus of its community. The first type of space can sometimes be easier to organize as the toolkit for opening a Fab Lab

and the network are already established while the second type needs to find grassroots dynamics to build it up. The challenges can be bigger. In China, interestingly, the concept of hacker/makerspaces have been twisted with the top-down approach to an initially grassroots movement. It is hard and rare to survive without the support of sponsorship by either local governments or private companies. The community is often not able to gather enough incomes with the membership fees, event fees and workshop fees to cover the expenses of renting places. All the visited makerspaces which are not directly created by the initiative of a government, a university or a private company, face struggle (XinCheJian, XinFab, Q-space, Lab 0 etc.). The makerspaces we are looking at in this research have an exploratory innovation approach with a mix of top-down and bottom-up dynamics in their creation or survival. The exploitative makerspaces such as here presented: Living Labs⁴⁴, Labs enterprise or co-working spaces are not that far from the makerspaces as some of the latter turn into the first ones for economic reasons such as Litchee lab in Shenzhen, which are not focused on. The governmental approach has nevertheless been interested in the exploitative top-down combination supporting the opening of places with tools but not always with existing communities hoping it would attract and create new entrepreneurs, maybe even a new elite. This idea of new elite reminds the critical positions (Peck 2005; Kohn 2013) toward Florida's theory of the creative city where the ideal of creativity also excludes. Money was at the center of this initiative as much for these new maker-entrepreneurs as for the government.

Furtherly interesting, in his purpose of defining the anatomy of the creative city, Cohendet has used two cases in Montréal to bring a deeper understanding of the existence and emergence of processes of creativity in particular "ecologies of knowledge" (Cohendet et al. 2010). He used three categories of layers: underground, middleground and upperground as basic components of the creative processes in local urban contexts. He also adds that each layer has its own specificities and role enabling new knowledge to be transferred from "an informal micro-level to a formal macro-level" (Cohendet et al. 2010: 100).

The underground layer focuses on exploration, as do makerspaces founded by autonomous individuals or communities, which are considered as an alternative form of space. Also, the underground is where the bottom-up ideas start forming before developing into bottom-up initiated organizations, which can be found in the middleground. The upperground focuses on exploration on a top-down or high hierarchical level. His figure on the "anatomy of the creative city" shows that dynamics in the exchange of knowledge and ideas on micro and macro-levels can be endless and all layers can exchange and learn from each other. This anatomy is part of a process of categorization construction, which shows the shared interest in inductive approach. Nevertheless, the reality is much more blurred than imagined or conceptualized!

⁴⁴ A living lab is an open innovation, interdisciplinary, user-centered lab operating within a public-private partnership. (see for example: smart living lab EPFL <https://fribourg.epfl.ch/en-smartlivinglab/> 18.02.2019)

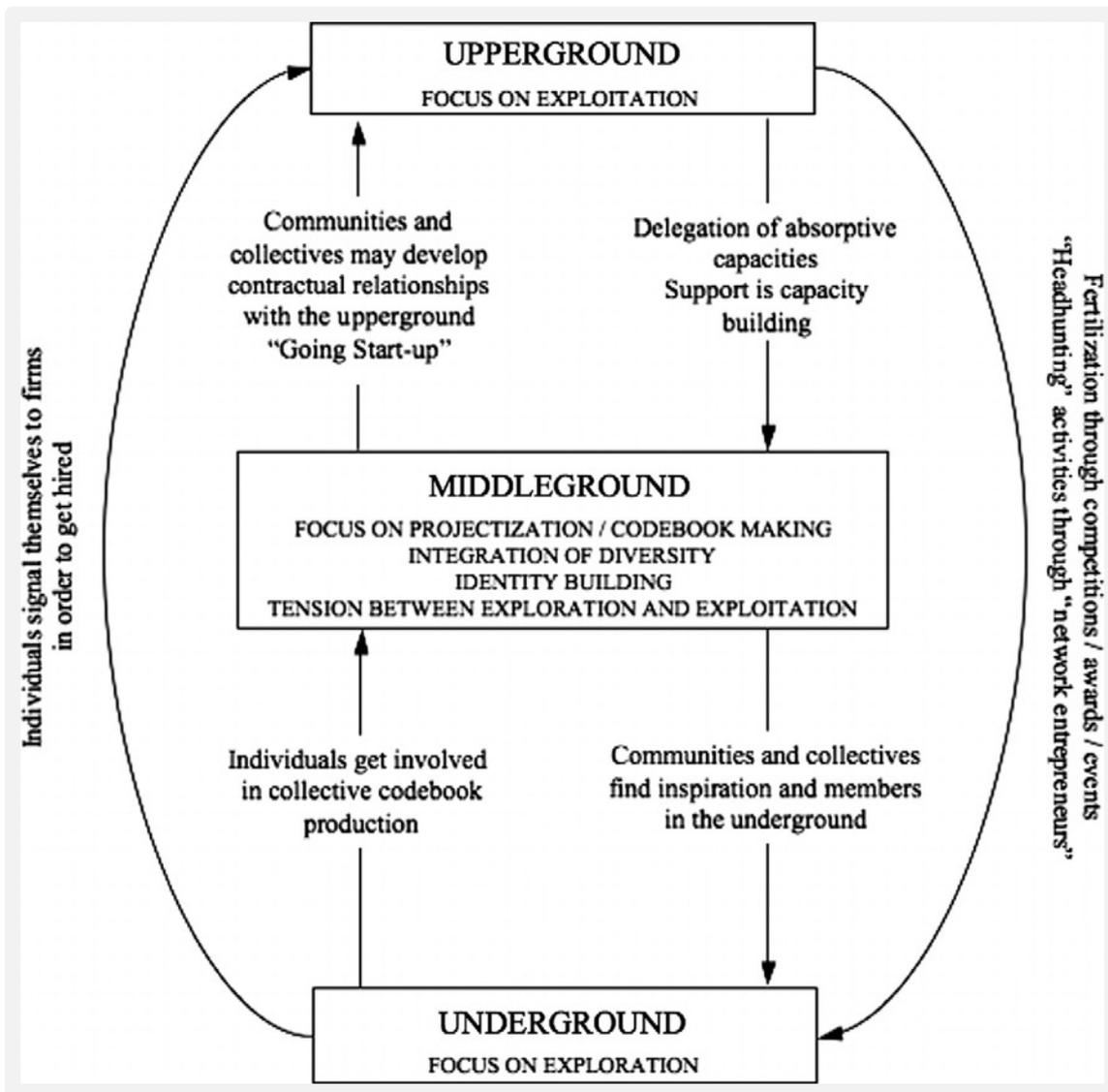


FIGURE 52:

The anatomy of the creative city
© Cohendet (2010)

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Inspired by Cohendet's analysis of space, the researchers of OPIMPUC project in Lyon (Renaud et al. 2019) developed a figure on third-spaces in Shanghai from 2010-2015 using the same approach of upper, middle and underground layers but adding a timeline to show the trajectory and development of these third space (Bhabha 1994; Oldenburg 1999; Soja 1996) or fourth space (Morisson 2018) theories. This figure excellently shows the bottom-up and top-down dynamics in which the maker culture has become a topic in China. The governmental interest, here upperground layer, keeps rising in the hierarchy and in 2015 announces the launch of the mass makerspaces program. At the same time as the government seems to be more interested by the

third spaces – spaces distinct from home (first) and work or school (second), with a transformative sense for the individuals, they are in-between (Soja 1996: 65) -, they are approaching each other. Third space organizations move closer to the government. If this figure were to be continued, we could imagine that the blue star of XinCheJian would be lower in the middleground layer with a small interest of the Shanghai government through the Shanghai Jing’An Citizen Science Maker Development Center. At the time of visit, March 2018, XinCheJian was about to receive financial support from the Shanghai government in long process. (Shanghai is the only city interested in supporting the existence of hobbyist makerspaces. For its lack of economic value, makerspaces of the hobbyist/co-working time are not interesting enough for funding except if they focus on education or on business.

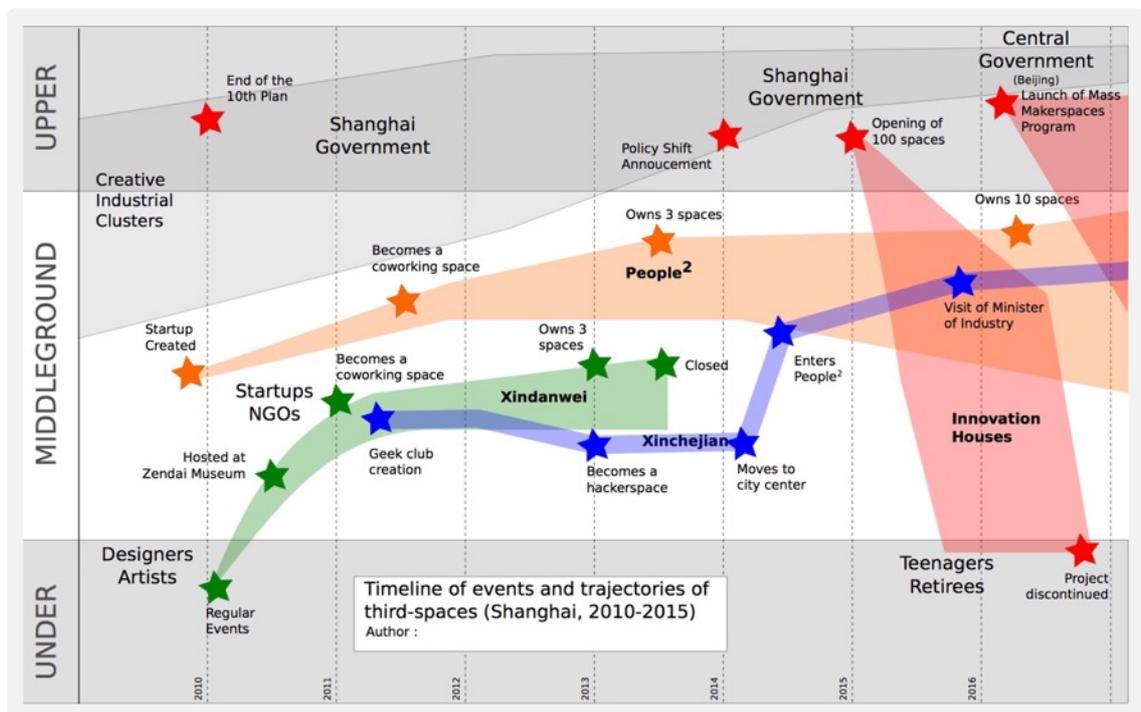


FIGURE 53:

Timeline of events and trajectories of third-spaces (Shanghai 2010-2015)

© Renaud et al. (2019)

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Liminal spaces: grasping an urban phenomenon

The makerspaces in China have an ephemeral existence and a transitive function. In the urban structure built by transportation functions and buildings, which can change but not as fast as what exists intra-muros, makerspaces are extremely dynamic elements which can evolve from one day to another. They can have a strong impact on their members even if belonging to a rather marginal culture. The imaginary around it and their urban concentration are important elements of research. A city can be looked at for its physical existence (buildings, roads etc.), for its life (events etc.), for its people (citizens, travelers, migrant workers, dreamers, politicians etc.) and for its dynamics (migration, changes, openings/closings). These liminal spaces of making are an urban phenomenon and exist at the crossroads of the mentioned elements. According to oxford dictionaries, a phenomenon is a fact or situation that is observed to exist or happen, especially one whose cause or explanation is in question. The interests towards these spaces change over time and as the people transit through them and the politics and governmental initiatives are evolving, they are ephemeral. They will live as long as a community is ready to make it live or as long as funding is provided. With rapid urban changes and therefore a context on the move, people are keener to go through own transitions. According to the French work sociologists Berrebi-Hoffman, Bureau and Lallement, makerspaces are vectors of innovation despite their possible discrete existence. They are at the origin of a cultural movement in the USA and Europe of transformation and experiment new forms of fabrication linked to the access to tools and knowledge (Berrebi-Hoffman et al. 2018: 18–20).

URBAN DEVELOPMENT AND PLANNING IN CHINA

Urban planning in China – a system

Chinese cities and China's urban planning is a top-down system with an implementation system by local governance entities. The locally implemented decisions are strategic, aligned with the central government's initiatives with different implications according to local priorities. The figure below represents the complexity of the Chinese hierarchical territorial governance.

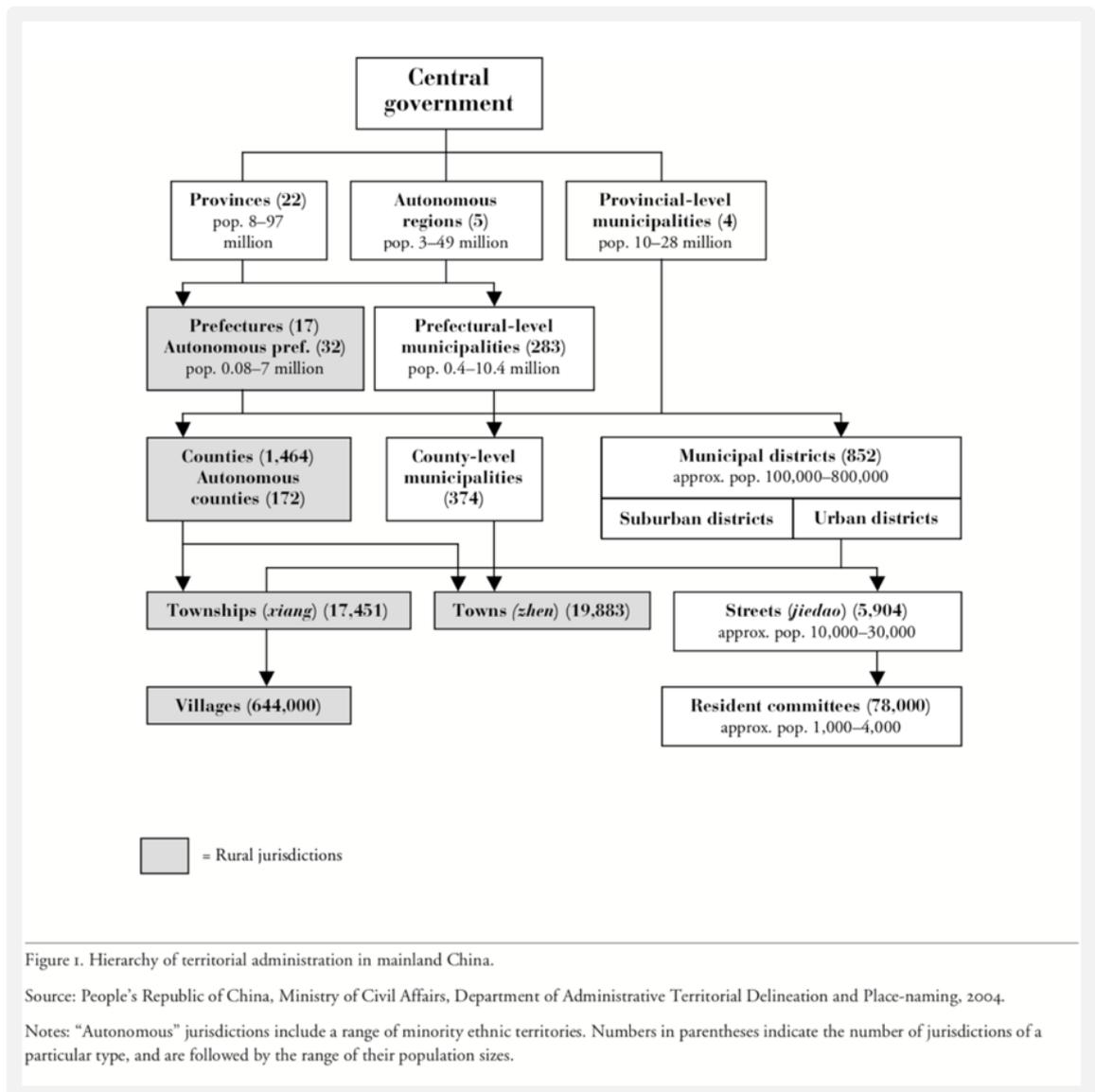


FIGURE 54:

Hierarchy of territorial administration in mainland China
 © Abramson (2006)

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The central government is rather small and the administration highly decentralized with only 5% of the total administration is at central levels as explained by Wong, Professor of Chinese Studies in Melbourne, Australia, and Karplus, Assistant Professor of Global Economics and Management at MIT, USA:

Under the central government, there are 43,000 sub-national (or local) governments distributed over four levels – the provincial, prefectural/municipal, county, and township levels (Wong & Karplus 2017: 669)

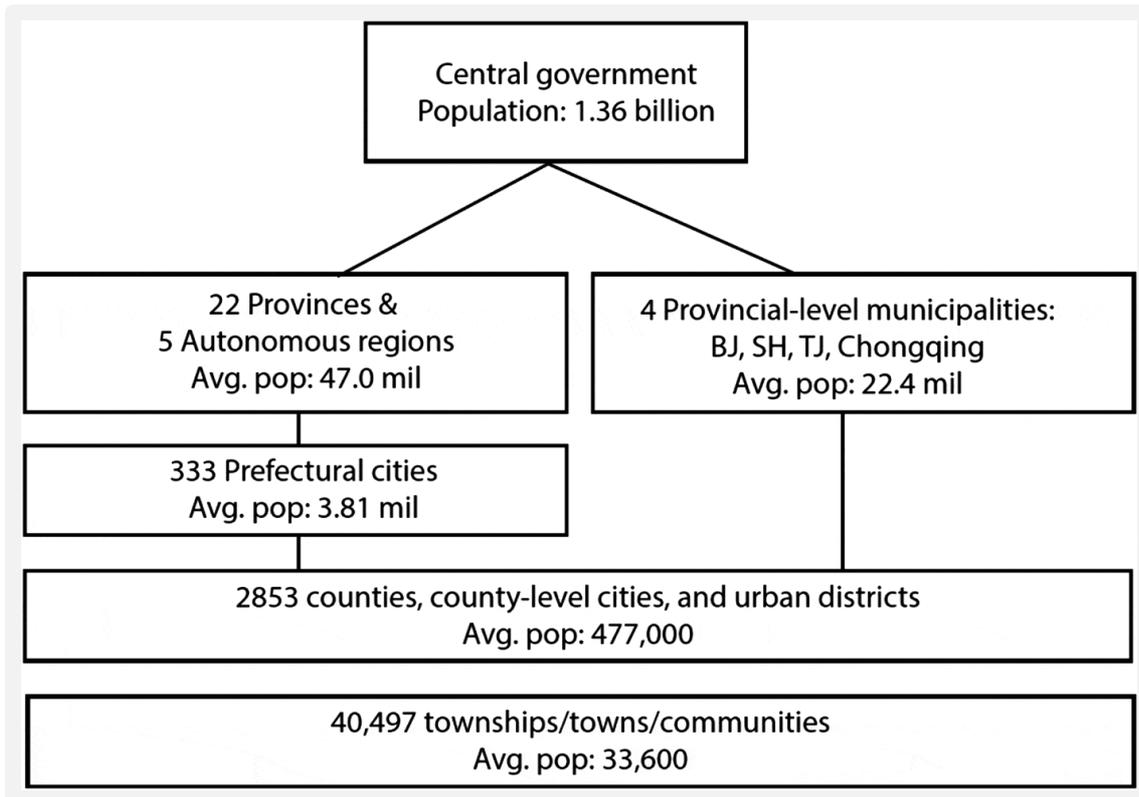


FIGURE 55:

The Five Levels of Government in China and the Size of the Population Governed at Each Level
© Wong & Karplus (2017)

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Decisions by local governments are strategic, aligned with the central government but applied locally. Based on case studies, Zhu Xufeng, Professor and Associate Dean at the School of Public Policy Management at Tsinghua University in Beijing, explains that the unitary structure, like China includes two interventions. The first is the vertical mandatory one from the central government, while the second is the horizontal competition among peer governments. He also

proposes four policy innovation models in China integrating these relationships in various ways: the enlightenment model, championship model, designation model and recognition model (Zhu 2017). The development of these models allows to understand the variety of interventions and relationships between horizontal and vertical forces knowing the centrality and top-down power of the government.

China's experiment-based policy-making requires the authority of a central leadership that encourages and protects broad-based local initiative and filters out generalizable lessons but at the same time contains the centrifugal forces that necessarily come up with this type of policy process (Heilmann 2008a).

Cities are playgrounds for experimentations. A strength of the Chinese government is the capacity of experimentation. The maker support initiative is part of these experimentations. The Central government has shown interest in 2015 but never repeated it or clearly given further instructions. Makerspaces are one example of the adaptation capacity of the government. There is a complex assemblage open for newness but under the hat of the central government:

Admittedly, government has formal powers to block changes or even reverse them, but once they enter the popular imagination, they often gain political momentum. At that point, the government will likely adopt new ideas much as previous dynasties did, to bolster its own legitimacy, even if this means declaring them to be ancient practice (Abramson 2006: 211).

Clusters and super regions

On all levels, China tends to organize the country by sub-regions or clusters for economic development. Mega-urban clusters uniting several cities and their surroundings for economic, urban and social development are fostered. According to the 13th 5 year plan, the country will set up 19 city clusters *chengshi qun* 城市群 which accounts for 22% of the country's size, 54 % of the population and 75% of GDP (Ren 2019). According to the Economist, China would be condensed "into a country of super-regions" condensing nine tenth of its economy in these defined zones (The Economist 2018). Also, in November 2018, the Central Committee and State Council expressed its will to further "establish a more efficient regional coordination and development mechanism" *zhonggong zhongyang guowuyuan guanyu jianli gengjia youxiao de quyue xietiao fazhan xin jizhi de yijian* "中共中央 国务院关于建立更加有效的区域协调发展新机制的意见"(Huang 2018).



FIGURE 56:

China's super-region clusters

© Economist (June 2018)

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Among these 19 clusters, three of them are leading the markets: Jing-Jin-Ji which is the Beijing, Tianjin, Hebei region in the North-East; the Yangtze River Delta (YRD), which includes Shanghai, Hangzhou, Nanjing, Hefei region in the Center-East; and the Pearl Delta Greater Bay Area (PRD), which includes Shenzhen, Hong Kong, Guangzhou (Preen 2018a; Ren 2019; Sheng & Geng 2018; The Economist 2018). They drive the economic development of the country, but are not the only bigger plans of the government. Trade and economic corridors are also developed by the Central government: Land Bridge Corridor, Yangtze River Corridor (horizontal) and Coastal Corridor, Harbin-Beijing-Guangzhou Railway Corridor and Baotou-Kunming Railway Corridor (Preen 2018b). The development of the clusters, regions and corridors are not limited to the national economic plan, China also develops a famous international initiative: the Belt and Road Initiative (Johnston 2019) connected to the national infrastructures in several strategic points with infrastructure such as ports, railways and economic centers.

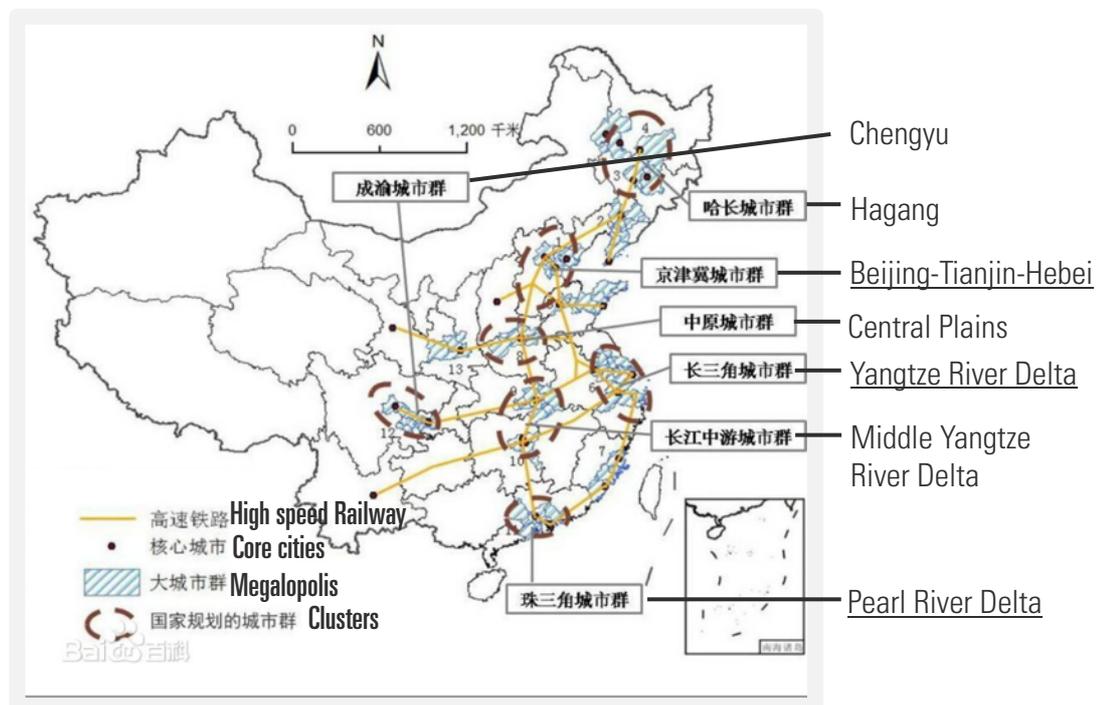


FIGURE 57:

Map of Chinese urban clusters (*Chengshi qun* 城市群 – cluster) screenshot and added legend © author (October 2018)

Source: Definition of clusters on baike.baidu.com

Smaller cities being integrated into the economy of the major cities of the country and grow together with them focusing on better infrastructure, more innovation and less emigration. China’s history of clustering is also expressed through the existence of special economic zones (SEZ) *jingji tequ* 经济特区, free trade zones (FTZs) *ziyou maoyi qu* 自由贸易区 or high-tech development zones (HTDZ). All these zones are aiming at revitalizing the economy with special economic and financial incentives. The SEZ exist in China since the opening-up reforms in the early 1980s (Ge 1999: 1267), with an experiment starting with four cities in the south-east including Shenzhen, strategically close to Hong Kong, Macau and Hong Kong. Step by step, the experimental zones have been implemented in the country to reach over half of the total SEZ in the world: “The 2018 official Zone Directory records five categories of 552 State-level zones and 1,991 provincial zones [...] This total excludes SEZs established at local levels” (World Investment Report 2019: 17). According to the United Nations Conference on Trade and Development (UNCTAD), China has established 156 HTDZs by 2017, first established in cities such as Beijing and Shanghai, they later spread in the country with “Incentives offered include access to quality infrastructure, corporate income tax exemptions for the first two years, a preferential 15 per cent corporate income tax, exemptions from tariffs on high-tech equipment and special treatment for employees at the

discretion of each zone, such as exemptions from income tax, subsidies on housing, cars, etc.” (World Investment Report 2019: 134). The pilot FTZ in China has been launched in 2013 in Shanghai, expanded in 2015-2017 and adopted as a national policy in 2018 (World Investment Report 2019: 144; Yao & Whalley 2016) . Not only is clustering essential on the regional and economic levels, also city clusters such as innovation parks and creative clusters are individually developed by the urban governments.

Parks, clusters for creativity, innovation and culture

Under the flag of innovation and creativity, creative clusters, attached to economic development, show the cultural adaptation and “the totalizing model of the command and control center shifting to regional competition and specializations” (Keane 2009a: 123). New types of social relations emerge between all actors: local officials can benefit of career advancement and monetary gain, developers have opportunities to invest in these clusters often including consumption spots (restaurants, shops etc.), (Zheng & Chan 2014: 13–16) while creators, artists, innovators, can benefit of it getting a new position in the creation of the society (Keane 2009a). Creative / cultural clusters are strategic experimental implementations and use of space. Fung and Erni define a cultural cluster as a “tool for exercising and assembling the cultural goods for the soft power needed, and the cultural products manufactured by the vertical production of the cultural industries can conserve a cultural specificity that represents the nation (Fung & Erni 2013: 654)”.

Every city has its own clusters implemented in the cities. **Shanghai**, for example, has *1933* – a former slaughterhouse transformed into a creative and cultural cluster - and *M50* – a creative art district with galleries and coffee shops (Gu 2012: 198, 2014: 124; Tan 2016; Wang 2009: 320–321) . But the creative / cultural / innovation clusters are not limited to art and design consumption. Makerspaces in Shanghai such as Innomaker+ and Mushroom Cloud are part of larger real estate investments of entrepreneurial parks and are part of other entrepreneurial communities: i.e. innospace and Icube+. XinCheJian and XinFab are not located in a specific industrial cluster but one is renting a space from a co-working space and the other one sponsored and part of an educative enterprise. Makerspaces are not directly products of these cultural clusters, but their potential is recognized by the latter and allows them to be integrated to it. It is also interesting to notice that the makerspaces founded by Chinese makers in Shanghai are part of clusters while the ones founded by foreigners are not directly. The direct support of the government is linked to the existence of these clusters mainly having Chinese stakeholders. XinCheJian, for example, had to change its legal representative from a foreigner to a Chinese with Shanghai hukou and have the entity registered in the Jing’An district in order to receive financial support to pay the rent (Interview John, XinCheJian’s legal representative, April 2019). According to O’Conner and Gu, the creative industry clusters are “valued as places for new start businesses, and spaces of learning and encounter for proto-businesses. In these ways they have an impact on the immediate area, often attracting more investment” (O’Connor & Gu 2014: 14). Makerspaces are as well for promoters, especially in 2015-2016 during and after the Chinese

government's initiative, a branding for attracting more investments. XinFab and other maker companies have suffered from an opportunity given by a real-estate investor who attracted them into a free space with the interest in their name and publicity (Interview Jade, XinFab manager, September 2017; Interview Danny, XinFab member and volunteer, April 2019). The project did not work out, financially and humanly, and the maker projects and spaces had to move out of the building.

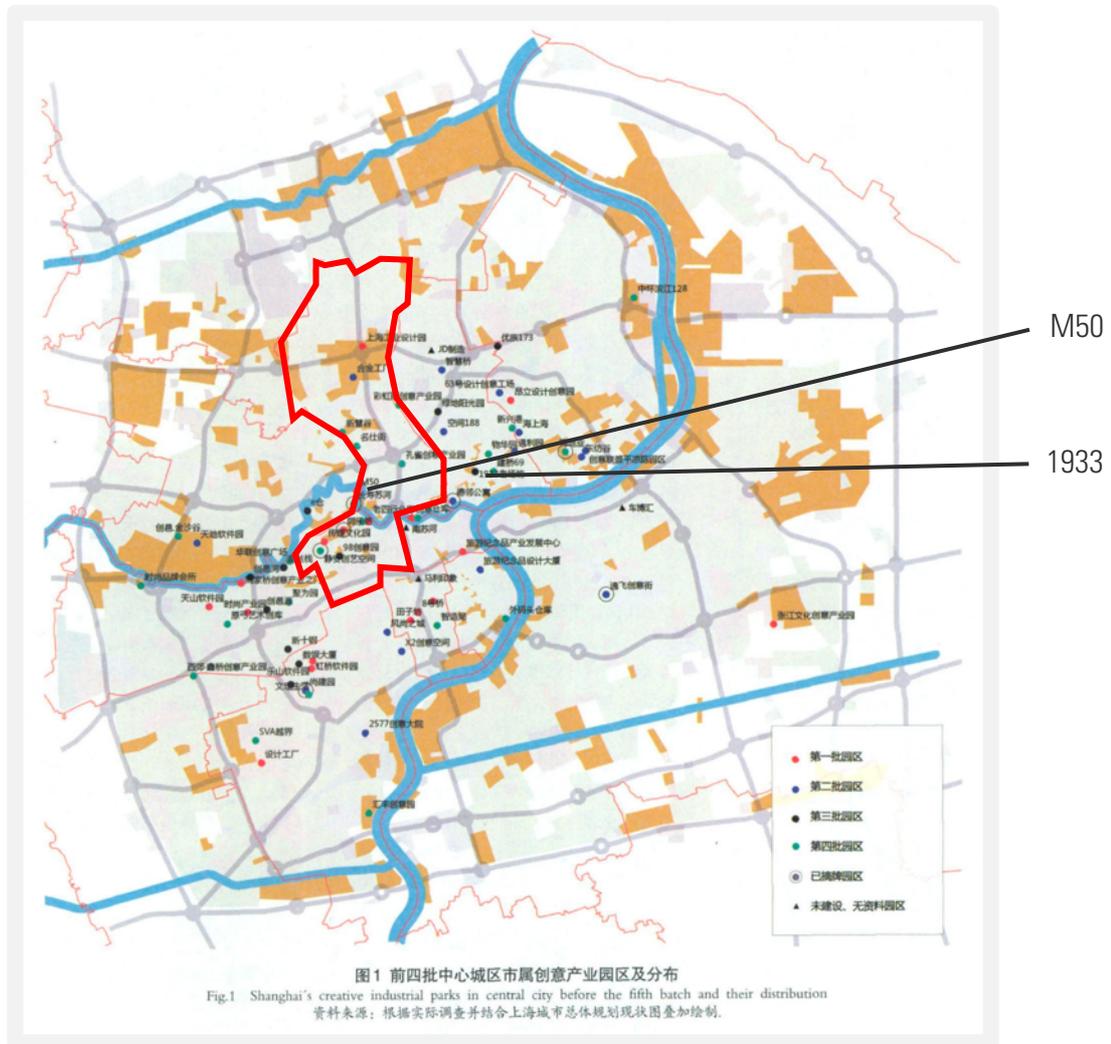


FIGURE 58:

Shanghai's creative industrial parks in central city before the 5th batch and their distribution with M50 and 1933 highlighted, as well as Jing'An District encircled in red map © (Luan et al. 2013) screenshot and added legend © author (December 2019)

Modified by the author

OCT-loft is divided into two parts: South and North which are divided by a road. The southern part has more coffees, restaurants and shops, while the northern part has more galleries and small companies.



42. OCT-Loft Shenzhen, Southern part (left), Northern part (right) (August 2019) © author

Chaihuo makerspace is part of the northern part of the cluster and keeps the symbolic location even if most of its activities take now place in x.factory which is located in the Vanke cloud city. The Vanke cloud city is a real estate project in which companies and shops started moving in from 2017 while the construction was still ongoing. It is a part of the city which is under development and therefore it is also part of the objective to develop and attract people and companies to this rather new part. Not only x.factory which benefits of a low rent deal in exchange of their attractivity for other companies, Litchee lab also moved from the former location of Lab 0 which was situated in the basement of a non-specific central location, Vanke cloud city in 2017. Nevertheless, in 2018, realizing it was too far from the center and wanting to change the business model from a service to education entities to an educative service (Interview Lit Liao, Litchee Lab founder, March 2019), Litchee Lab moved again closer to the center and to families and children, namely to the Futian Creative Park close to OCT-loft. Shenzhen Open Innovation Lab (SZOIL) is situated in the Sino-Finnish Design Park next to incubators, companies, start-ups, and restaurants. SZOIL is next to the border to Hong Kong in Futian district and further away from the center. It is, as x.factory, situated in a zone which is in development and in which real estate and bigger projects invest. An exceptional cultural cluster in Shenzhen is the Dafen Oil Painting Village (Li et al. 2014) (see Chapter 4), which is a village of painters mass producing paintings for orders, mostly from abroad (Wang & Li 2017: 708). The mass production of copies of painting calls for attention for the impressive skills of its artists, its poverty and struggle, and also the discussion around intellectual property (Li et al. 2014). Production lines of art and culture also recall the debate from the Frankfurt Schule, shortly developed in Chapter 2: "All mass culture under monopoly is identical, and the contours of its skeleton, the conceptual armature fabricated by monopoly, are beginning to stand out [...] For the present, the technology of the culture industry confines itself to standardization and mass production and sacrifices what once distinguished the logic of the

work from that of society” (Horkheimer et al. 2002: 95). In a massification of art, how to understand and recognize the ingenuity of those who perform the copy? Dafen Oil village is part of the urban landscape of Shenzhen and contrasts the top-down created clusters enabling innovative practices⁴⁵.

Beijing, the political capital, has clusters such as Zhongguancun Science Park or 798 Art Zone. Zhongguancun Science Park – the first high-tech industrial development park in Beijing - was created in 1988, 10 years after China’s economic reforms launched by Deng Xiaoping, and is strategically located in Haidian district next to Peking University (PKU / BEIDA) and Tsinghua University, both highest ranked universities in China. It includes high-tech enterprises, institutions (also educational), governmental entities, innovation centers and consumption spots (Zhu & Tann 2005). The impact of the development of this cluster has an important role in Beijing’s urbanization process and more specifically of this district. Beijing makerspace and i.Center Tsinghua – Tsinghua’s makerspace - are in a close distance to the innovation park. The other makerspaces part of this research are situated in non-specific buildings in the center of Beijing. Atelier Fab Lab and Q-space, founded by foreigners, contrarily to Beijing makerspace and i.Center, are located in private apartments adapted to their needs. In the last location of the Art school of which Atelier Fab Lab Beijing is part, the first floor of the apartment is dedicated to the art school and the management, while the second floor is dedicated to the Fab Lab with machines and self-made furniture by the team (Interview Sébastien, Atelier Fab Lab founder, November 2017). The famous 798 Art Zone is the north-east of Beijing in a regenerated industrial zone has become a place for art galleries, enterprises, restaurants, coffee shops and co-working spaces. In his article, Chou describes a project, which by creating an infrastructure for creativity, actually neglected the development of local bottom-up artistic network:

[...] after the state intervened in 2006, 798’s major function shifted from being a place where artists pursued artistic creation to a venue for showcasing a world city’s cultural industry, and for cultural promotion and consumption. Although this shift has enabled 798 to play a greater economic role, it adversely affected the creation of culture, because the organic network of artistic production was largely replaced by a commercial network focused on cultural promotion and consumption (Chou 2012: 213–214).

Even if 798 does not host any makerspace, the state intervention and the creative cluster model and logic are similar to the clusters hosting makerspaces. The risk that Chou underlines, is the one that co-optation of the grassroots dynamics leads to its integration into a top-down strategy with the risk of losing its purpose and authenticity. In addition to a risk for the people themselves,

⁴⁵ A documentary on Dafen Oil Painting by Haibo Yu and Kiki Tianqi Yu on screens since 2016 depicts the everyday life of one of its painters (see Chapter 4).

the creators, Fung and Erni see a risk on another level, namely the dependence of a whole area on the success of such clusters:

The formation of cultural clusters is a double-edged sword; it brings wealth to the nation but the nation also bears a certain degree of risk. Now, China places almost all important cultural industries inside these clusters, where the interests of the industrial community are maintained mainly by efficiency, profit-optimization and economies of scale. The over-reliance on clusters to push up the GDP can be a risky strategy. Should there be a negative economic down-turn, it is not only the industries that are vulnerable. The entire community, districts or ecology that depend on the cluster's revenue and productivity would significantly be dragged down by the stalling of the industry (Fung & Erni 2013: 654).

The map below shows the Creative Clusters in Beijing in 2009 with Zhongguancun in the North-West and 798 in the North-East mentioned here.

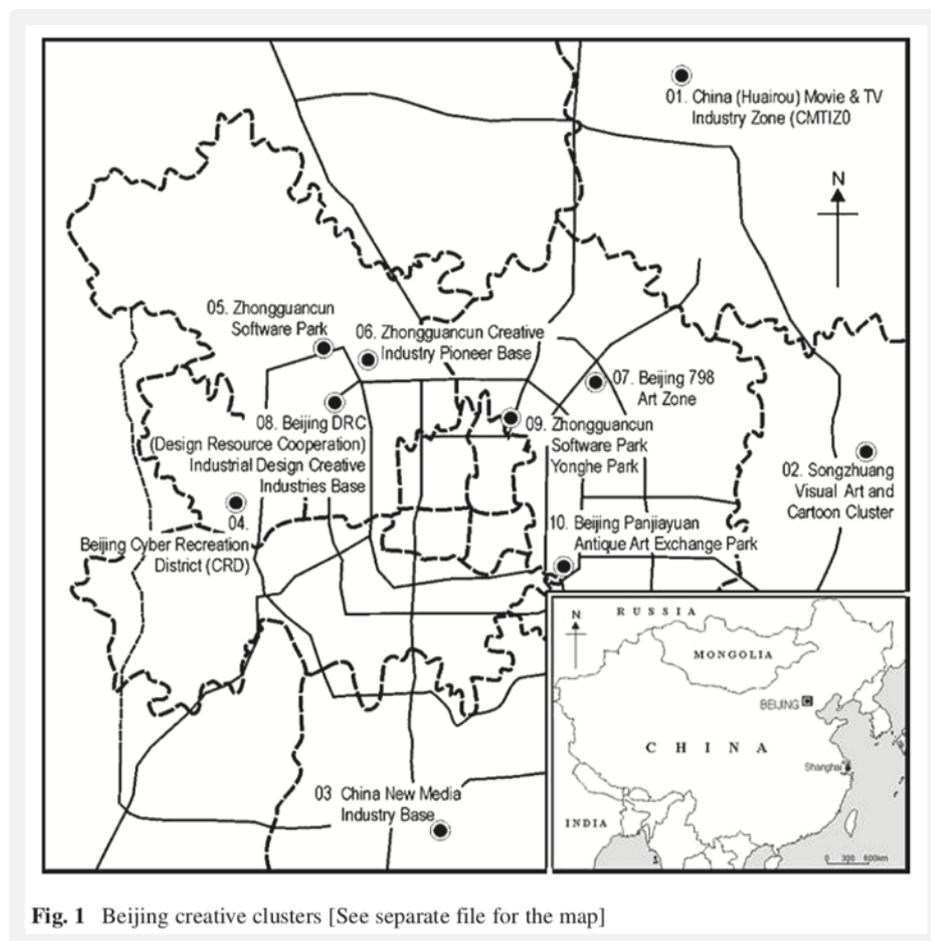


FIGURE 60:

Beijing Creative Clusters
© Keane 2009

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The economic strategy developed through the creative cultural clusters to bring together a physical community of services and businesses reminds of the working units in place, which concentrated the workers and the services they needed in and around their place of work. Each city or even each cluster organizes and develops its clusters differently. For some, a cluster is part of a larger regeneration program, as it is happening in the hutongs of Beijing (Interview Anonymous, November 2017) where all business and traces of everyday life is brought back into one cluster for each area. For some, it is an opportunity of investment for real state and the creation of job opportunities, consumption places and rejuvenation of the area. Co-optation and enabling of new spaces are opportunities and risks for people, enterprises and government entities. Makerspaces founded by Chinese (Mushroom Cloud, Chaihuo, x.factory, Litchee Lab or Beijing makerspace) are often part of these clusters, while the spaces founded by foreigners are usually in city centers but not in clusters (XinCheJian, XinFab, Lab 0, Atelier Fab Lab Beijing, Q-space). There are several explanations for that: Chinese makers are often part of or linked to tech companies and the step of opening a makerspace is almost logic, Chinese citizenship and local hukou can be asked to obtain support or spaces, the access to support information is limited for foreigners, and some makers are not interested in being part of clusters in order to remain as independent as possible. The position of the makers, and also of local governments, determines, together with the affordability of a place, the geographical location of a makerspace.

Shanghai, Shenzhen and Beijing are cities with different pasts, roles and ambitions even if in the competitive race of urban and economy efficiency.

CITIES, EXPERIENCES & IDENTITIES

A city, a place, has its own culture partly imagined and partly built. It is defined through the urban imaginary and the places, technologies and infrastructures developed as well as how they are used. Cities are part of local discourse (neighborhoods, districts, municipalities) and above (national and international levels). The interplay and exchanges between the structures and practices make a city in the first place, completed by the network of social practices inhabiting and making the structures alive. A cities' identity can vary according to its structure adapted to its geographical environment and social practices. In urban China, historic design patterns persist and have been shaped by administrative hierarchy in the national system (Graezer Bideau 2019). Even though it is globally the case, China has the specificity of the government monitoring and mobilizing populations "both by restricting residence and by making local communities responsible for their own internal law and order" (Abramson 2006: 199). The typology of the cities evolve in time and Gaubatz differentiates three type of Chinese cities in the 20th century: the city before 1949, the city from 1949 to 1978 and finally since 1978: "a traditional city that had evolved over more than three millennia, the socialist city that was created during the Maoist period and the contemporary city that is emerging in the current reform era" (Gaubatz 1999). Fulong Wu, Chinese Professor of Planning at University College London, UK, later writes about Chinese

emerging (Wu 2007) and world cities (Wu 2019). With the economic development and the digitalization of daily life, the city of the 21st century is an accelerated digitalized mega-city where wealth is accumulating and where a part of poorer future citizens continues migrating to following the dream of the Chinese urban life. The planned platformized global Chinese city is at the heart of bottom-up and top-down tensions.

Urban governments are working between the top-down directives and the bottom-up initiatives as showed earlier. Depending on the directives given by the State Council, the cities are enforcing them independently and in a competitive way between each city trying to fulfill the directive in the best way possible. The competition between the cities also marks different positionings. While Rockets was explaining in an interview, Shanghai is a more hobbyist, financial and international city; Shenzhen is business and electronics oriented while Beijing is political and artistic (Interview Rockets, co-founder of Mushroom Cloud and former XinCheJian member, September 2017). As Capdevila, researcher on innovative and creative communities and cities, writes

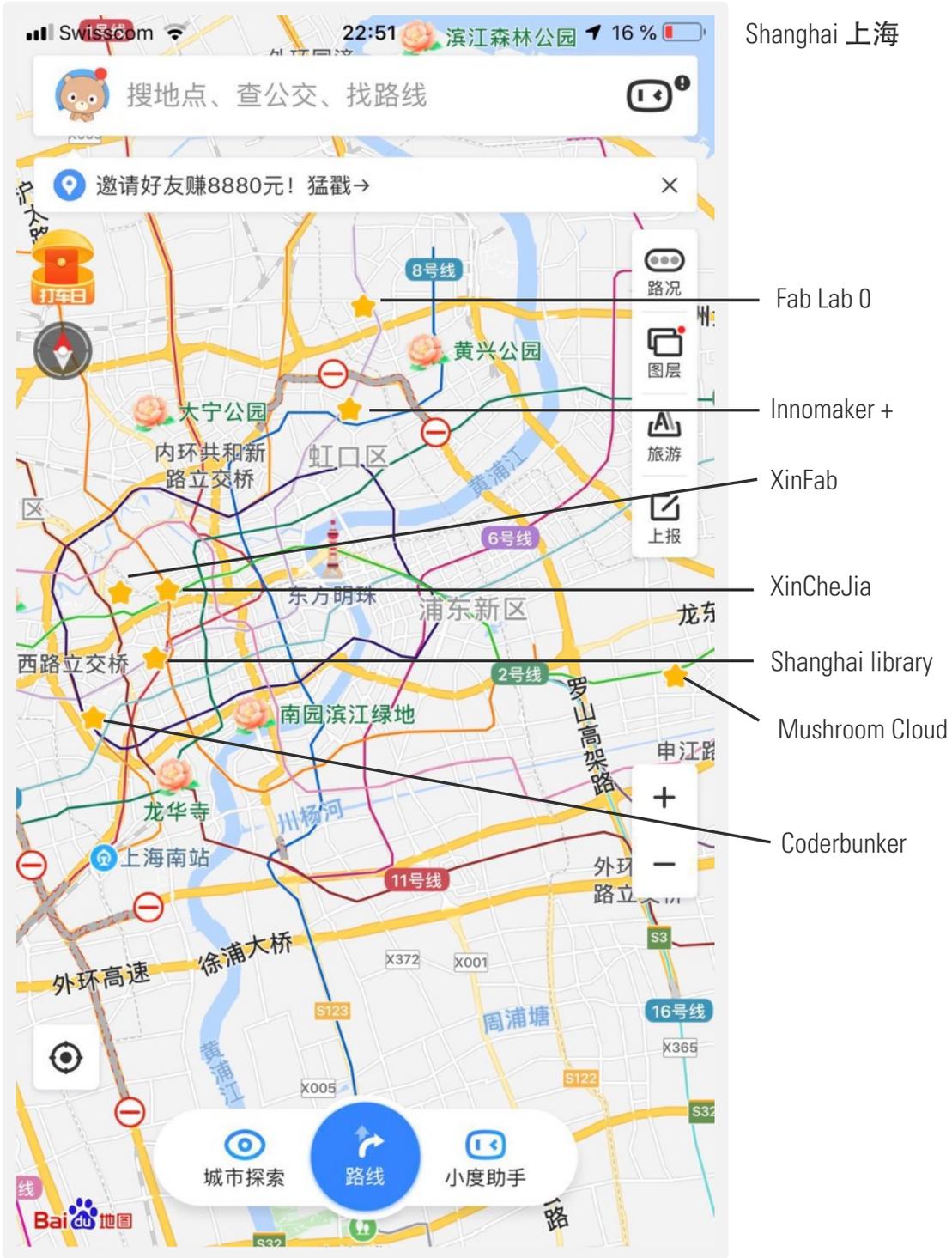
[...] cities represent the creative soil where communities of innovation might emerge based on the face-to-face interaction of a diversity of local actors. The creation of new collaborative spaces facilitates the emergence of new communities and the reinforcement of existing ones. At the local level, they also represent focal points of attraction of the locally distributed talent, seeds for the engagement of citizens and local platforms for social and economic development. (Capdevila 2017: 93)

In China, more specifically, the recognition of the cultural life through its urban regeneration has been of great importance as Wen Wen writes “[...] renovating cultural sites and initiating cultural events has become a panacea for urban generation” (Wen 2017: 12). The government being conscious and willing to regenerate cities and rejuvenate the country (Taylor 2015), is packaging culture, creative clusters and heritage in the new urban life. The city becomes a place of consumption and a place to consume. “Heritage industry” helps to make the transition on an economic level from manufacturing to service sectors:

Urban heritage is not simply a frozen medium of the past, but can be a major selling point to attract consumers and to promote urban economy [...] Furthermore, urban heritage is contested when cities simulate the past and invent tradition in order to sell the cities, while simultaneously creating a break with previous socioeconomic relations. Urban heritage is implicated in the complex choices made by ordinary individuals in the face of political control and capital accumulation (Su 2015: 2886).

The complexity of Chinese cities are not only linked to the multiple actors and dynamics between state, private sector and inhabitants, but also due to its rapidity of change and evolution, its ambitions, the competitiveness between the cities, the international image, the will to attract and to limit, the history and past, the geography and the existing ecosystem. Shanghai, Shenzhen and Beijing’s identities are built on all these elements.

Shanghai: the creative international city



MAP 11. Makerspaces in Shanghai – screenshot of maps.baidu.com with added legend (June 2019)

Shanghai makerspaces are spread over the city – each area develops its own clusters and supports or not specific projects. Innomaker+ and Mushroom Cloud are financially and spatially supported by companies since their opening, while XinFab is currently supported by a smaller company and XinCheJian is supported by the local Jing’An government to pay its rent during three years. The two last mentioned have been struggling financially on a regular basis. Both community members are conscious of the risk that the space may close at the next phase of financial instability of the space. Coderbunker is a private company, Fab Lab 0 is part of the Tongji university and therefore financed by the institution and *chuang.xin kongjian* is part of the Shanghai library. As Shanshan mentioned during an interview, makerspaces which manage to survive on the long run need the support of the government or of the private sector (Interview Shanshan, former XinCheJian member, organizer of maker events at Shanghai library and founder of a non-profit organization supporting the maker culture, December 2017). She is, with the staff of the library, in charge of the organization of events of *chuang.xin kongjian* at the library, was part of the XinCheJian community and founded a non-profit organization (NPO), Shanghai Jing’An Citizen Science Maker Development Center started in 2015 and was registered in 2017, with the support of the Jing’An government. Jing’An is a central area of Shanghai where XinCheJian, XinFab and the Shanghai library are situated. According to Shanshan, Ricky, the co-founder of XinCheJian and later founder of Coderbunker, has contacted Shanshan (who he coached for making the website of her association), to ask whether she could make the bridge with the local government to help XinCheJian to survive financially. For this reason, XinCheJian had to register the company at its name, which only functions for incoming financial support, to Jing’An government. Before, the legal representative of XinCheJian was Kevin, which was part of a group of XinCheJian members of the beginning and who in between has created his own company. This geographical change of legal registration of XinCheJian has been part of a dynamic of generational change of makers. The former members have taken a clear distance to the community and stopped being part of staff meetings leaving the new generation to drive the community on all levels (Interview Paul, former XinCheJian member, September 2017 & Interview Kevin, former XinCheJian legal representative and member, October 2017). The requirement of Jing’An government to register the company in Jing’An has brought an internal election for a new legal representative to happen in fall 2017. In addition, as soon as the support of the government to cover the rent of the place became concrete, John was chosen as the new legal representative. He is a very interesting figure and a real supporter of the maker culture in China: “How people like can survive in this planet without a place like that?” (Interview John, April 2019). According to him, the maker culture is not a movement yet. It is a trend at the moment and will become a movement in the future. He and his wife moved specifically to Shanghai for XinCheJian. As he was explaining, he is an entrepreneur who always felt different from the others, which reminds of the concept of squiggle labs explained earlier, and he was looking to found a new place as he lived in South Korea. A friend of his suggested him to come and visit XinCheJian in Shanghai, which after six months of time in Shanghai made him move definitely. His visionary and enthusiastic view is very positive for XinCheJian. For him, this move and decision underlines his conviction: “I hacked my life! (Interview John, April 2019). John sees the current disappearance of makerspaces because of the rush towards subsidy and the national call for people to become entrepreneurs:

Because of the Prime minister, everybody should be entrepreneurs. So, people are just following, they are not entrepreneurs. They absorb money. [...] These government makerspaces want to try new things but don't understand them [...] Initially, government were supporting spaces but have no way to avoid the fake ones (Interview John, XinCheJian's legal representative, April 2019).

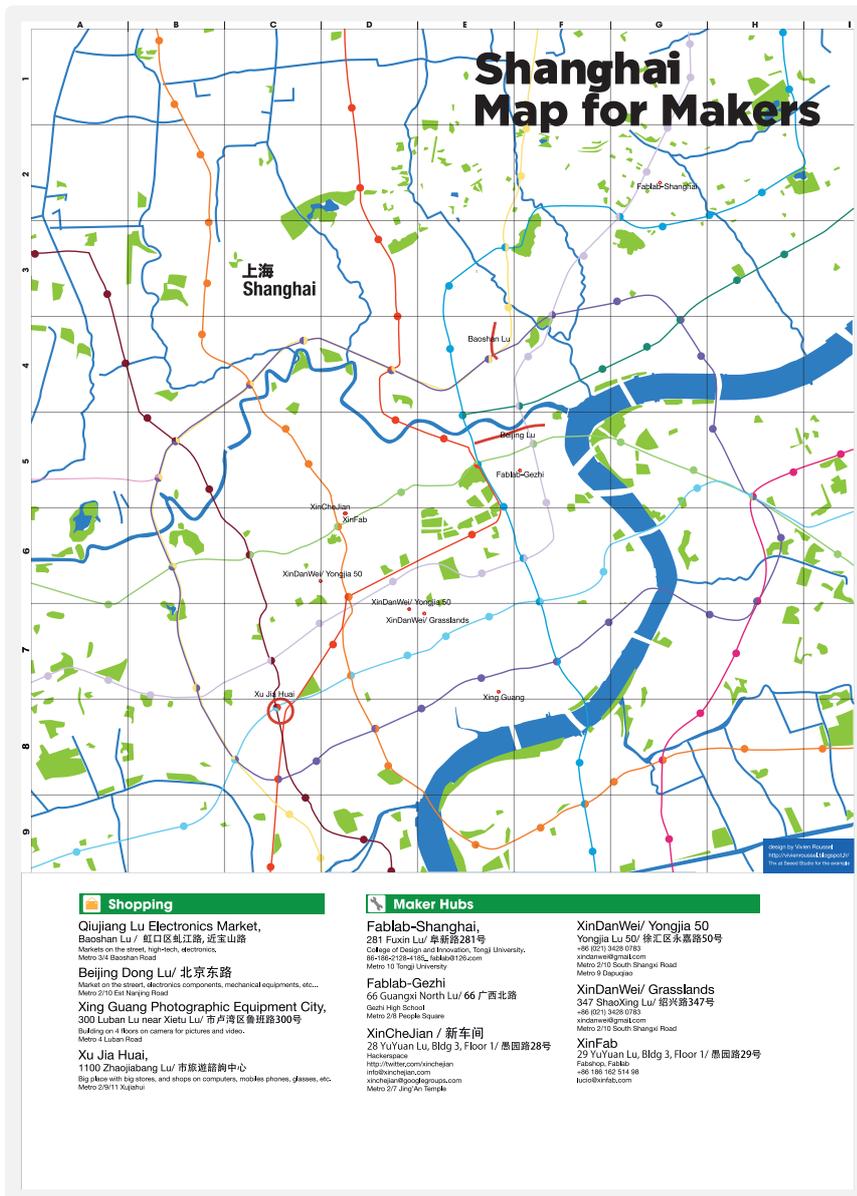


FIGURE 61:

Shanghai Map for Makers
 © Roussel (2016)

Reproduced with the kind permission of Vivien Roussel

Jing'An, with its support for XinCheJian shows an interest to keep the first makerspace of China in its district. While Rockets explain the location of Mushroom Cloud in Pudong district to be closer for the makers working in this area to have access (Rockets, co-founder of Mushroom Cloud and former XinCheJian member, September 2017), Amanda agrees with the practicality of the location but also underlines the importance of external funding:

MB: areas better than others in Shanghai to start start-ups?

AM: ideally, each district or CBD should have their own makerspace, it's like going to the gym, it should not be too far from where you live.

MB: how did you chose this place?

AM: first of all, at the very beginning, I chose not too far from XCJ because it's very central and transportation is very convenient but the space, I got was really really small because it is very expensive. It wouldn't be big enough for me. I tried some time there because it didn't really work so I moved to Hongqiao train station area, because it is very convenient to the airport and the bullet train station, it was an ideal location for people coming from other cities. But then again, because of the renting and everything, it's too expensive so then I thought if I'm going to do this on my own, at some stage, I'm going to be kicked out again for money or something else so I shouldn't be doing this on my own, I should work with other people and make this happen. So, I came to innospace+. Innospace+ has is one of the first entrepreneur's café in China. Started in 2011... the club. Now organize 30-40 events per month. It's very active and influential, it attracts start-ups and innovative people. It has this community support and also innospace incubator has been running since 2012, funding and incubation services it's also very mature. So, for me, innospace+ has its own fund as well to invest early stage start-ups. For me it is a very good choice. I don't have my own fund. I don't really know much about incubation services, how to provide it, what I do have is the maker's community, the hardware startups and some VCs but that's not convenient, I will need more resources to make them successful.

MB: Do you have funds from companies?

AM: Innomaker is funded by innospace+, that's where the money came from. Also, innospace+ purchased the equipment. And also, the mother company of innospace+ is a land development company. This building is owned by this company, so innospace+ has a discounted price for rental. Rental wise it is also affordable. Of course, innospace+ is paying it' own rent and Innomaker is paying it's rent to innospace+ with a discount. In general, it is very affordable. (Interview Amanda, Innomaker+, former XinCheJian, September 2017).

A makerspace depends on the community but also on its accessibility to the urban space. The power in place with real estate investments, political and commercial strategies shape the existence of makerspaces. As it happens often in China, prices can rise abruptly without explanation of protection of the renters. Places are destroyed, rebuilt, renovated, rejuvenated in a larger, often benefit-oriented strategy but rarely for the people who inhabit or use these spaces. On the map, which was a project of Vivien Roussel in 2016, Xindanwei have closed and XinFab has moved twice and closed and reopened twice. The double challenge of maintaining a community and finding an affordable rent are the reasons. The city allows the makerspaces to exist but also endangers their existences through its costs and economic games in place. Vivien's map is a testimony or a trace of a time window in the fast urban and maker culture changes.

The aim – for Vivien for example - of mapping maker hubs and shopping spots for makers was to help any new maker to find the places needed to build projects.

The dynamic of the makerspaces is linked to its culture, its economy and also its surroundings. The ecosystem of Shanghai is the one of a global city, which, with a strategic trading port since the Qing dynasty, became a city with British, French and American concessions after the First Opium war, which also influenced its architecture with the now famous French concession and Bund areas (Lee 1999). In the 1920s / 1930s, the city had become an artistic hub for cinema and music – more specifically jazz.

Shanghai has a population of 26'317'000⁴⁶⁴⁷ (Population Stat 2019). Shanghai is also the richest city of China in terms of GDP – CNY 3'267,987 in December 2018 (CEIC Data 2019). The economic success of the financial center leads also to its attractiveness on a national and international level. Kong writes about the global and local attraction through its architecture and its inclusive and exclusive aspects.

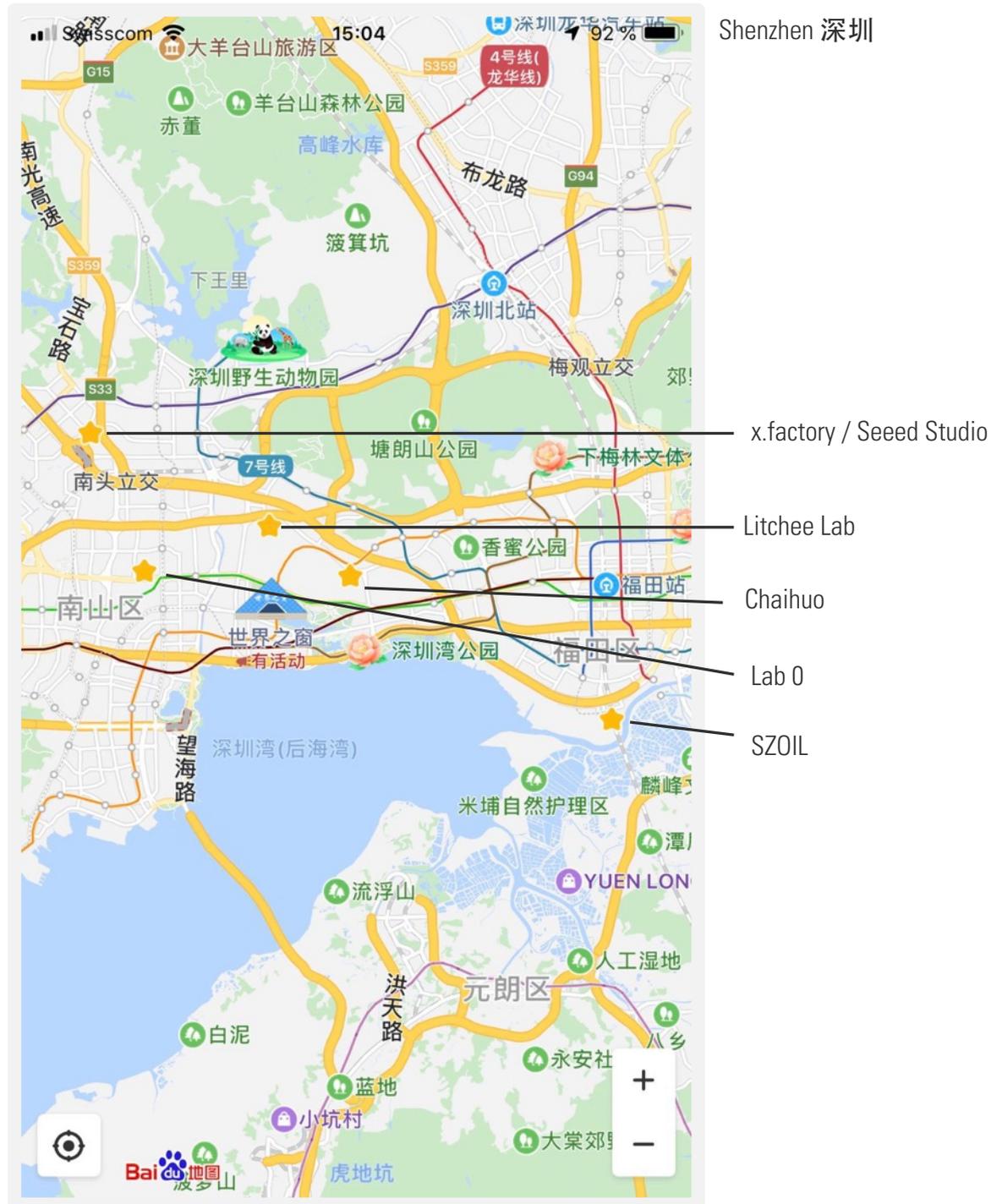
For Shanghai, the symbolic capital associated with global city status is translated in paradoxical ways, environmentally, culturally, and socially through the Shanghai Grand Theatre a centrally-located modern state-of-the-art edifice. While enabling the large transnational population in Shanghai to remain “connected” with global cultural consumption and drawing pockets of the local population into this aspect of “global citizenship,” it is simultaneously alienating and displacing local populations. While introducing multiple and varied cultural performances “global” in origin and “world-class” in standards it is simultaneously neglecting (or at best, not stimulating) local arts and culture (Kong 2009: 14)

The city is a spatial, historical, and structural reference for the spaces inscribed. Shanghai, the historically creative and international city, is the birthplace of makerspaces in China, where the opening of XinCheJian marked the beginning of a movement. Shenzhen makerspaces characterize their expansion benefitting from the city’s ecosystem and using the positive narrative to rebrand themselves internationally. Finally, Beijing hosts marginal alternatives, which do not directly identify with the Chinese maker movement’s way of thinking.

⁴⁶ 4'288'000 in 1950, 8'606'000 in 1990, 14'247'000 in 2000 and 20'314'000 in 2010.

⁴⁷ This type of data has to be understood with a risk of variability according to sources and to who is included in the statistics (with hukou / without hukou for example). This source is based on World Bank, United Nations, Census and GeoNames.

Shenzhen: the new Silicon Valley and the makers



MAP 12. Makerspaces in Shenzhen – screenshot of maps.baidu.com with added legend (June 2019)

The city of Shenzhen is built along the coast and has therefore a longitudinal shape with constant extensive movements towards the lands. It is part of the Guangdong province “a pioneer in land use experimentation” and the Pearl River Delta region, which is a “a model par excellence to elaborate on the pros and cons of experimental urban restructuring approaches (Schoon 2014: 194). Its first makerspace was Chaihuo makerspace, which was co-founded by Eric Pan and is based in OCT-loft. One of its particularity is that it is part of the governmental narrative and therefore of the maker initiative as Li Keqiang has visited it in 2015 to promote the innovative dynamics of it and entrepreneurship across the country. Since 2017, Seeed studio is not only the support of the Chaihuo community, but also of x.factory. x.factory, which is in Vanke cloud city, a new development zone of Shenzhen is a platform for national and international makers including university projects (University of Geneva, Tsinghua, Ecole Polytechnique Fédérale de Lausanne EPFL). Another important player in the maker panorama, and specially as another maker platform in Shenzhen, is Shenzhen Open Innovation Lab (SZOIL) with David Li as a co-founder. The lab is supported by the government and plays a role in international project support as well as the yearly maker week taking place in Shenzhen. Makerspaces have brought the opportunity for Shenzhen to rethink its branding. As an UNESCO city of design, Shenzhen is redesigning its city with its urban rejuvenation and international image. In Shenzhen, makers become “maker entrepreneurs”; they are part of the new “Silicon Valley for hardware” (Lindtner et al. 2015) or as Lallement write, the invention of the new silicon valley where industrial and financial sector are mixed (Lallement 2015). According to An and Chipchase, reporting for the MIT Technology Review, there are four main eras of Shenzhen’s recent development (An & Chipchase 2018):

1. Shanzhai era

Characterized by manufacturing of electronics, copied goods, created a new market, phones, gadgets with short-product development cycles

2. Formalization era

Driven by three factors: upscaling skills and work conditions, successful companies create their own brands, government’s intellectual-property enforcement

3. Maker movement

After Li Keqiang’s visit of Chaihuo makerspace in 2015, over thousands of “makerspaces” were set up to encourage innovation of products. Fail. Mostly co-working spaces which closed due to their business model.

4. Globalization era

Innovation ecosystem emerges compatible with the global market. Access for venture capital, global crowdsourcing platforms etc. and rise of a Chinese creative class.

Shenzhen has not only upscaled its economy and market, it has also become a center of interest for the world. Shenzhen was not noticed by the world until recently (Interview, O’Connor, independent anthropologist in Shenzhen, August 2016). The maker culture has allowed the city to take a turn in its international narrative and the development of its infrastructure despite its marginality. But the city of migration (Bach 2011) was already globalized during its Shanzhai era. Manufacturing and worldwide export participated already to globalization. The eras shown above use globalization as a positive outgoing movement, which is in fact not new, but rebranded.

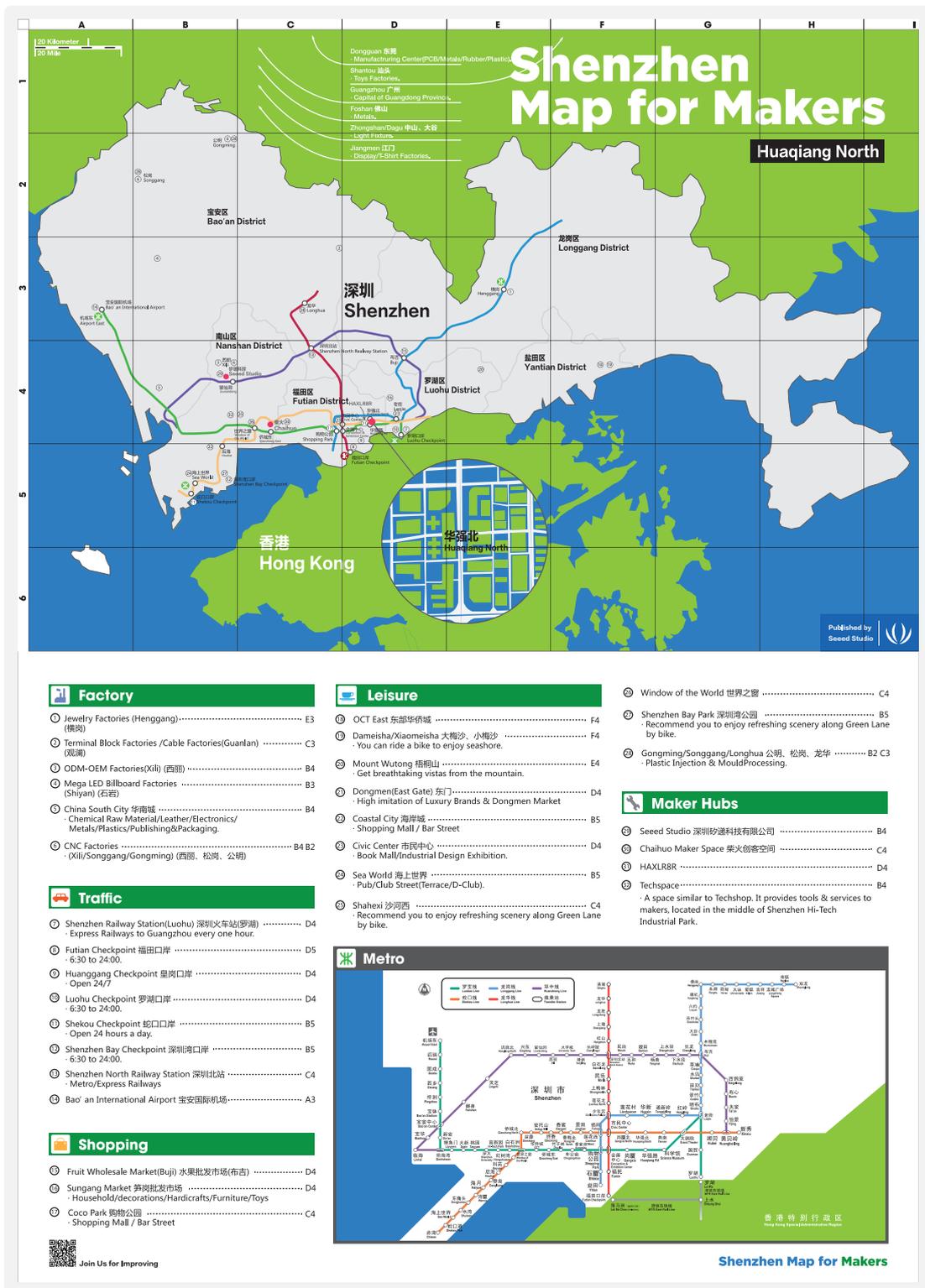


FIGURE 62:

Shenzhen Map for Makers

© Seed Studio (2015)

Free download on seedstudio.com (July 2016)

Part of the Narratives are also international documentaries exploring and presenting the successful city of Shenzhen. Exploring China's "counterfeit market and startup culture", the WIRED's reportage "Inside Shenzhen: The Silicon Valley of hardware"⁴⁸ shows a rather idealized image of Shenzhen - the paradise for makers - a fascinating fast-speed high-tech city. Bunnie Huang, an American entrepreneur who published, among others, the book: "The Essential Guide to Electronics in Shenzhen" is featured at the beginning. His successful book, which simplifies and explains the access to the electronics, including in Huaqiangbei where all the electronics malls are, is out of stock. The reportage shows impressive drone images of the growing city, including construction sites; shares interviews and explains the successful history of Shenzhen.



FIGURE 63:

Shenzhen by WIRED reportage (2016)
screenshot © author (June 2018)

Source: www.wired.co.uk

This reportage is part of the new narrative of Shenzhen, it has brought attention to a city which was not on the radar. The narrative of this reportage is also very similar to "Shenzhen at the forefront of tech revolution"⁴⁹ by Bloomberg in 2018. It does as well show the electronic markets,

⁴⁸ Reportage available at <https://www.wired.co.uk/article/shenzhen-silicon-valley-of-hardware-wired-documentary> (last accessed 31 July 2019)

⁴⁹ Reportage available at <https://www.bloomberg.com/news/videos/2018-11-21/shenzhen-is-the-unofficial-tech-capital-of-the-world-video> (last accessed 31 July 2019)

the “urban success”, food and more, putting Shenzhen on the map of innovation and rather than calling it a silicon valley, which often is the case, it considers Shenzhen as the “unofficial tech capital”, the invisible engine of tech startups and innovations as the next screenshot shows. In the following image, the background shows the gloved hand of a worker on a PCB board with a text by the reportage team underlining the essential background role of Shenzhen.

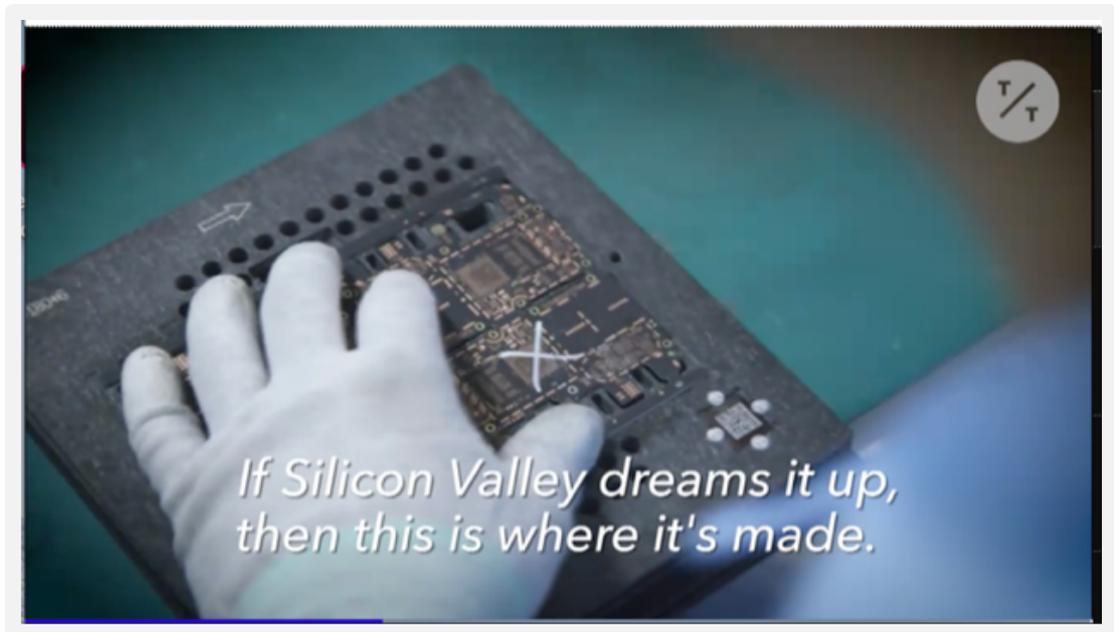
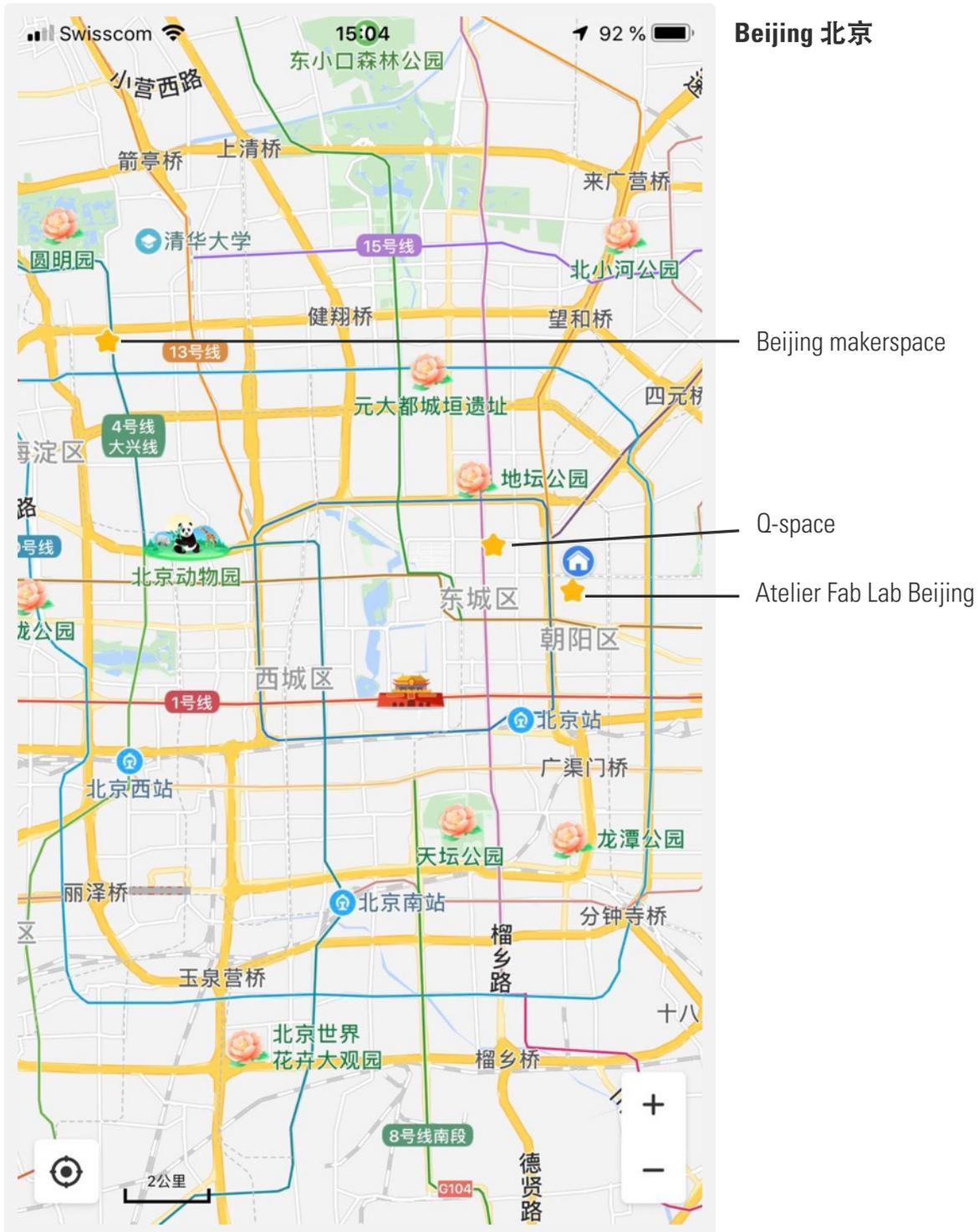


FIGURE 64:

Shenzhen by Bloomberg reportage (2018)
screenshot © author (June 2019)

Source: www.bloomberg.com

Beijing: the historic and political capital



MAP 13. Makerspaces in Beijing – screenshot of maps.baidu.com with added legend (June 2019)

In Beijing, the most famous makerspace is Beijing makerspace, formerly known as Flamingo EDA. Beijing makerspace is located in Zhongguancun a technology hub situated in the North West of Beijing. The area is neighboring the universities of Tsinghua and Peking. The makerspace was initially opened by (John) Shenglin Wang and Xiao Wenpeng. From 2012 to 2014, they organized the maker carnival. In 2015, the makerspace started changing with the enthusiastic policy. It is still in the same place but the management has changed. From a community organized by a community, it is now a community organized by a team supporting the development of the space and its potential marketable opportunities.

As far as I have been able to see, I am the only person working there that is not a part of the several, around 6, startups that have their offices there. I have only met there another foreigner who was working at one of the startups but besides that, I am also the only foreigner. On my initial visit to the space, I met people from some of the startups and mostly their goals and aims are related to "Maker education" and/or "Outside consulting." There does not seem to be a maker space culture as we know it in Western Countries. There does not seem to exist this kind of "open doors" mentality where it is open for the general public to come and work on projects while being able to ask for assistance from other members of the community. At first, I thought that was a cultural thing, that maybe Chinese people, or Asian people, don't work on projects for fun or as a hobby but only strictly for business purposes, but after the things I saw at Shenzhen I think that is not the case. As I see the current state of the space, it is a bunch of startups that joined forces to have a nice place for their offices and get equipment and tools that they share between themselves for developing their individual projects. Their goal is not to create a community and nurture it, but apparently in recent times they are trying to change that since little after I joined I was told that, and I quote the message, "the general manager want[s] to encourage the actual makers to do what they want to do." As far as I have seen, there are no open nights nor other types of events. The only activities that involve "outside people" are workshops and courses they give on the weekends. (Interview Enrique, Beijing Makerspace member, December 2017)

Enrique's feedback to a question on how Beijing makerspace functions lightens up the change that occurred with the political enthusiasm on makerspaces. According to an article on Baike, there are weekly workshops and networking activities as well as an aim to create an open source ecosystem (Baike Baidu 2018). Enrique nevertheless describes an aim for performance and incubation of projects. The founders are not part anymore of the makerspace even if their story is romanticized and presented during meetings and workshops at the makerspace (September 2017). Beijing, 北京, the capital of the north with spaces following governmental and alternatives such as Tsinghua lab, Beijing makerspace, Atelier Beijing Fab Lab and Q-space. The city has been evolving fast. Creative industries find their place around the city in the social, economic and urban as Keane writes: "Construction workers have relentlessly cleared space for high-rise apartments while historic factories are demolished or turned into centers for creative industries. The view flying into Beijing resembles a pancake-like development sprawl dotted with five-star tourist hotels, modernist business centers, hyper-modern television towers, eye-catching sports complexes, overpasses, underpasses, ring roads, technology parks, theme parks and convention

centers". (Keane 2009b). Makerspaces are indirectly part of this urban renewal, even if not always, they are often linked to the creative clusters and industries

Beijing is a historical city which participates to the modernization and innovation path of the country. Enrique shares the feeling of being in an old city and contrasts it with Shenzhen.

Specifically talking about the cities, coming from a really big city [Mexico City], I have always had problems with small cities because they are not very dynamic, Beijing came as a counter example to that. It is a really big city, way too big for my taste, quite developed, but that has this feeling that it is stuck in time. It feels kind of decrepit in some way. I cannot really explain the reason for that sensation but that is how I feel it. Shenzhen on the other hand is a much smaller city but it has a more modern look and feel that make it much more appealing. Also, in Shenzhen the maker ecosystem is much more similar to what I know and like. What I have seen in Beijing is much more focused on entrepreneurship and incubating. (Interview Enrique, Beijing makerspace member, December 2017)

The city of Beijing is an ancient and modern city which calls for patrimonial reflection. The modernization is an "authentic urban revolution" (Bobin et al. 2005: 56) which asks for a work of consciousness, memory and planification. According to Zhang, the dynamics and paradoxes of the Chinese world can be witnessed around the historical built Chinese patrimony (Zhang 2003: 167). Heritage and monuments are emblems of the past, the present and the future. The historical heritage is linked to renewal, destruction and embellishment problematics in some areas of Beijing which is historical, cultural and also economic. The will to valorize certain buildings is linked to the fear of buildings with historical Chinese characteristics disappearing for the means of "urban modernization" (Bobin et al. 2005: 124). The question of heritage is paradoxical in China. Indeed, the tension between modernity and history or public and private interests are stimulated by politics of destruction and renewal with the interest for certain defined spaces. The protection of the famous city involves a will to preserve part of the historical cities, even if it means destroying the rest (Zhang 2003: 167). The race for heritage or authenticity can change the course of history with "arbitrary monumentalizing" of certain remains, specially to promote tourism a form of "resource-heritage" (Chenivresse 2002: 371–372). "Face-lifting" or "neighborhood beautification" (Shin 2010: 264) can be perceived as opportunities or as threats. During the lifetime time of the present project (2016-2019), several artistic and creative niches have disappeared in the center of Beijing due to renovations. Critical positionings, towards massive destructions of some districts and the state of the ruins waiting for reconstruction promises, are part of the Beijing urban landscape (Visser 2004: 280). The choice of place is often pragmatic and linked to the cost and the connections to nearby places. Q-space is, for example, located in a private home in the hutongs, which makes it an affordable and central location. Atelier Fab Lab is also centrally located in the residential outskirts of the hutongs, close to high-income residential areas. These makerspaces are alternative and marginal in contrast to the platformization take place in Shenzhen. They nevertheless represent an aspect of the maker culture ignored by the Chinese governmental initiative.

Cities and contrasts

China's future is urban. The poem below written by a participant of the "Mapping for makers" workshop in China organized by the EPFL team (Chapter 3), draws a contrasted image of the city. There is wind, laughter, a dismantled landscape, people reconnecting, the artificial heart beats and they land on a high building.

海岛 Island

新来的人感到味觉失灵 The newcomer didn't feel it
风速太快 The wind blew too fast

到处都是漩涡 There are swirls everywhere
地面上没有坚固的风景 There is no solid landscape
地面惹你发笑 The landscape makes you laugh
海岛也在坍塌 The islands are collapsing
人们聚在一个塑料纸壳的里面 People gather inside a plastic shell
在地下戴着发光的眼镜 Wearing shiny glasses underneath
除了讨论手机零件 In addition to talking about cell phone parts
人们伪装起来像一些飞行的鼯鼠 People pretend to be flying squirrels
切碎的海平面把所有人连接起来 Chopped sea level connects everyone
幸存者下降并触摸到层积岩的瞬间 The moment the survivor touched the rock
我们拥抱着宣布找到了制造奇迹的山羊 We embraced the announcement of the miraculous mountain
那时海岛变得透明 When the islands became transparent
似乎浮冰将成为永恒的家 It seems that ice flows will be our eternal home
我们来到同一座桥上 We came on the same bridge
但是通过沙漠来辨别彼此 But know each other through the desert
黑色的雾中我们织网 In the black fog we weave the net
这一次导航定位在电线缠绕的人造心脏 This time the navigation was located in the wire wrapped artificial heart
在最高的楼顶 At top of the highest building
人们再次失重 People were again weightless

Poem by Madbadlizard / with a translation by the author

Without joining the dystopian image of Madbadlizard - a maker with an artistic background learning to code at the time of the research - , the following pages will show pictures of Shanghai (p.229-230), Shenzhen (p.231-232) and Beijing (p.233-234). The aim of these pages is to show contrasts and diversity of each of these cities. On the left page are pictures of the buildings from different periods and on the right page are pictures of people in their urban settings.



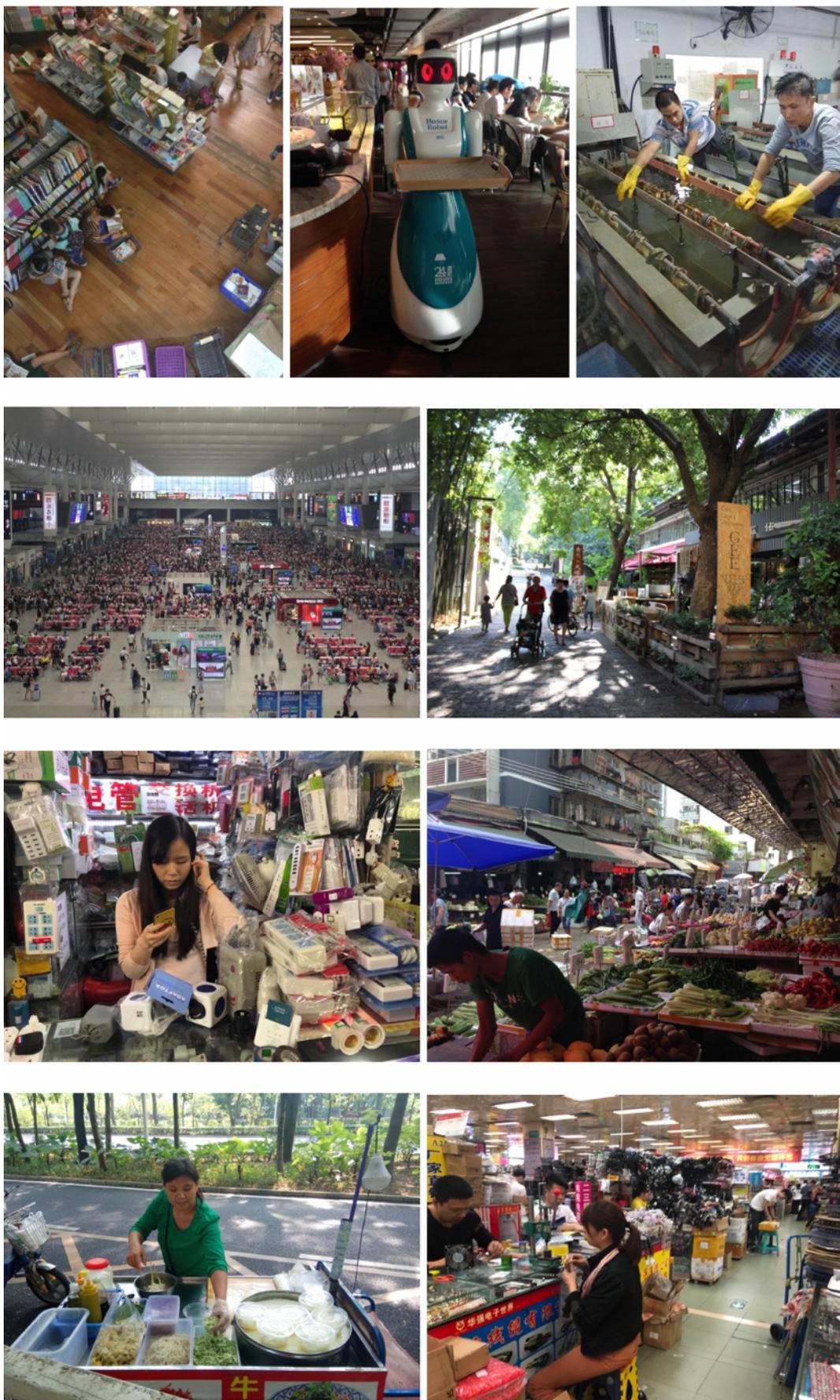
43. Shanghai's contrasts: city (2016-2019) © author



44. Shanghai's contrasts: people (2016-2019) © author



45. Shenzhen's contrasts: city (2016-2019) © author



46. Shenzhen's contrasts: people (2016-2019) © author



47. Beijing's contrasts: city (2014-2019) © author



48. Beijing's contrasts: people (2014-2019) © author

MAKER EVENTS – FAIRE, CARNIVAL & INTERNATIONAL REUNIONS

Makerspaces are liminal places and sometimes the maker culture unfolds itself in short temporary settings through events. Maker events are rather informative and celebrative than liminal but they are part of the creation of a narrative of the maker, attracting many types of people to their events. In each city, the maker events are different due to the dominant maker culture in place. There are two main maker festivals: the maker carnival and the maker faire. While the maker carnival has mainly been an event in China since 2012 organized by communities in Beijing and Shanghai, the maker faire, which is part and recognized by the international Make community, took place in Shenzhen since 2012 and in Beijing since 2015. The main difference is the branding of the event and its international connections. What is a maker carnival?

什么是创客嘉年华

创客嘉年华是中国创客的大 party 一次灵感和手工的盛宴，一个接触科技的游乐场。通过亲身体验参与、动手制作激发大家的创新潜能和源动力！(DF Robot 2019).

What is the Maker Carnival?

The Maker Carnival is a big party for Chinese makers / creators, a festival of inspiration and craftsmanship, and a playground for technology. It inspires everyone's innovative potential and is source of empowerment through hands-on experience and hands-on production! (author's translation).

Shanghai has a yearly maker carnival, which has children with parents and grand-parents and young students as visitors. There are drone races or robot fights as well as many stands where children can discover activities or where technology-related toys can be purchased. The maker carnival is organized by Mushroom Cloud / DF Robots since 2012. The language of the event, the website, the WeChat account is Chinese and the type of participants have changed over the years turning into more educational projects and business than the original tinkering of the maker culture in Shanghai (Interview Rockets, former XinCheJian, Mushroom Cloud co-founder and DF-Robots, September 2017).



FIGURE 65:

Call for Makers / Maker Carnival Shanghai advertisement by Mushroom Cloud / DFRobot (2019) screenshot @ author (October 2019)

Source: www.makercarnival.org



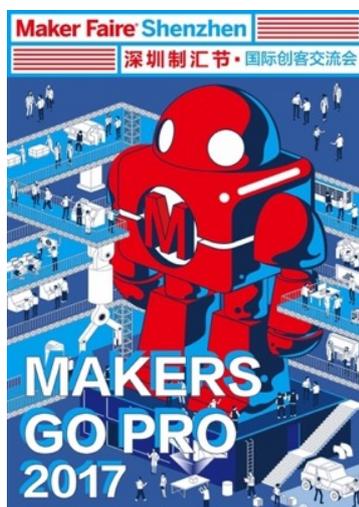
49. Shanghai Maker Faire, Knowledge and Innovation Community, Shanghai (October 2017) © author

While Shanghai organizes maker carnivals, **Shenzhen** is the organizer of one of the most important maker faires in the world. The maker faire according to its Shenzhen organizers is “independently organized and operated under license from Maker Media, Inc.”. It underlines its double focus on fun and business, which excellently represents the combination of the original maker culture and the governmental support for professionalizing makers in the specific Chinese urban context.

熟悉 Maker Faire 的伙伴们都知道，For Fun 和鼓励家庭、学校参与创新和自造 (making) 一直都是 Maker Faire 一直以来一个非常显著的标签。自 2012 年，Maker Faire 从大洋彼岸走进深圳，我们也致力结合深圳的城市特色，打造了一场又一场独特的创客文化展示、体验的盛宴。2017 年起，我们开始对活动主题进行了深度聚焦，除了呈现 “make for fun”，进一步突出、呈现专业创客群体 “make for business” 的故事 (Mei 2019).

Those familiar with Maker Faire know that Fun, encouraging families and schools to participate in innovation and making has always been a very important label for the Maker Faire. Since 2012, the Maker Faire has crossed the ocean to take place in Shenzhen. We are committed to combine the urban characteristics of Shenzhen in order to create a unique festival of creation and experience of the maker culture. Since 2017, we have begun to focus on a theme for each event, in addition to presenting “make for fun”, we also further highlight and present the story of the professional maker group “make for business”. (author’s translation).

The annual Shenzhen maker faires branded by make / make media take place in Shenzhen since 2012 (the first two were mini maker faires) and is organized by Chaihuo makerspace. This double identity of the maker faire is represented by the “makers go pro” or “maker pro”, which will participate more actively in the economic dynamic of the maker culture in China. The maker faire includes conferences with success stories of projects or ideas turned into success stories from Chinese and international entrepreneurs as well as talks by Make representatives from the world.



50. Shenzhen Maker Faire Conference and poster (November 2017) © author



51. Shenzhen Maker Faire (November 2017) © author

From 2012 to 2014, **Beijing** had maker carnivals organized by Beijing makerspace. It was a unique and alternative event that Beijing and Shanghai makers decided to have. It was part of the original makerspaces, with many projects presented by communities.

With the national political enthusiasm for maker culture in 2015, the city of Beijing has taken over the organization of the event and changed from the maker carnival to the maker faire. The co-optation of the event is reflected by the change in location - from 798 in 2014 to the Olympic park or the China Millennium Monument. Beijing having taken over the annual maker event in the city under the branding of Maker Faire show its compliance with the national maker initiative and the will to showcase its involvement. The institutionalization or co-optation of the event has changed its audience and its content. Different city spaces are hosting different types of activities and

publics. The political initiative had a strong impact on the maker events. While the governmental side picked up the more professional type of makers, the original or alternative events would rather remain with more hobbyists and children activities encouraging their curiosity and development skills. From the maker carnival in Beijing in 2014 to the maker faire in Beijing in 2015, the atmosphere had totally changed. In 2015, there were many school groups visiting the maker faire, as well as grandparents and kids, from the exhibitors, there were a few maker communities but mostly 3D printer and other DIY technology or game sellers, small entrepreneurs basing their activities on DIY and a conference part involving the stars of the Chinese maker culture including representatives of Shenzhen's maker culture. At the same time, the only exception was the presence of Q-space. Q-space was at the last corner of the tent and its presence is due to the former visit of Mitch Altman in Beijing. Through his connections, Q-space was part of the Beijing maker faire 2016. Beijing makerspace, which was an original makerspace and organized the maker carnival in the past had changed its management to and was then more into the government's priorities. In 2014, at the maker carnival, there were a majority of young adults fascinating by technology and presenting many projects at the faire. There were also university technology communities as well as a few technology sellers. The main language of these events is Chinese. The symbolic of places is also to be remembered. While the makerspace never moved its location, the locations of the maker events (and its branding) have changed.



52. Beijing Maker Carnival, 798 Art District, Beijing (March 2014) © author



53. Beijing Maker Faire at China Millennium Monument, Beijing (August 2016) © author

It is worth to note that Make Media that brands Maker Faires, Make Magazine, and Make Media has ceased its operation in 2019 due to financial unsustainability as announced by its CEO Dale Dougherty (Constine 2019)y. On the Shenzhen Maker Faire website, Eric Pan, CEO of Seeed Studio and co-founder of Chaihuo makerspace and x.factory, expresses his thankfulness to Make and announces that the maker faire 2019 will take place as planned in 2019:

We at Seeed are saddened by the news surrounding Maker Media. MAKE: Magazine and Maker Faire have been most instrumental in helping cultivate the maker culture and spreading the joy and passion of making around the world.

We are humbled and thankful (as both an open source hardware company and the producer of Maker Faire Shenzhen) for all the passionate and dedicated hard work that Dale Dougherty, Sherry Huss, Sabrina Merlo and all the other employees who have been part of the Maker Media team have provided us. They have helped a global generation discover the joy of creating – something that in many instances had been often overlooked.

In the early years of Seeed, I traveled to San Francisco and witnessed the amazing passion, energy, and strength of the community through events such as Maker Faire Bay Area, and the numerous maker and hackerspaces, and was inspired to bring this back to China in the form of a maker space, Chai Huo, and Maker Faire Shenzhen which has grown and inspired so many Chinese to where it has taken on a culture of its own in China. For inspiring me to provide this to my local community I am forever grateful to the community and the Maker Media team.

[...]

In Chinese, there is a simple phrase, “加油” (pinyin: jiayou). It means to add oil or to fight on. To the community that Maker Media has helped inspire and grow across the globe I say, “加油”, and come visit us in November [...].

Dale Dougherty announced in June 2019 the closing of Maker Media, which he founded in 2005. In spite of the closing, the team hopes to maintain the maker spirit, the events, and the repositories. With the motto: “glimpse the Future and Get Inspired”, maker faires will possibly continue existing despite the transformation of the parent entity into a community rather than a business. In the USA, the maker culture was not co-opted by the government even if the White House hosted a maker faire in 2014 (De Vinck 2015). In China, albeit the national initiative, each city developed its own strategy. Shanghai didn't co-opt the maker carnival, but district governments support makerspaces in various ways. Shenzhen co-opted the movement, uses its narrative, hosted the Fab12 in 2016, supports the maker faires organized by Chaihuo and sponsors SZOIL. In Beijing, the maker carnival was co-opted into a maker faire, but after the non-renewal of the governmental initiative and the closing of Make, it seems the maker faire will stop taking place. The political image was more important than the genuine interest in these faires.

While some fairs and exhibitions run the risk of disappearing as information became readily accessible on the Internet, others have chances to be reinforced thanks to the Internet. The latter is happening with maker events in China. The maker faire in Shenzhen is attended by makers from all over the world owing to the spread of the information and the specific ecosystem in which the event takes place. The Shenzhen platformization of the maker culture, globally accessible, and integrating tinkering and professional making, is a success. Makers travel from everywhere in the world to join the maker faire, learn from this ecosystem, and further develop their projects.

In addition, maker events also allow companies to position themselves by sponsoring or participating. It is important for tech companies as Intel and Microsoft to transfer technology into innovative products. Makers are developers and users. Tech aficionados with different backgrounds, they broaden the application of technology. Maker events can be developed in any direction. There is for example the Taobao Maker Festival, by Alibaba, which takes place since 2016 in Hangzhou, spotlights “the ingenuity and originality of young Chinese inventors, designers and product makers” (Hsu 2018) and is dedicated to creative Chinese entrepreneurs. BBC culture shares about the Chinese event with in an article paid and presented by Taobao:

Taobao is more than a sales platform adapting to a new generation: it is fostering creativity and leading the trend, showing that Taobao has the vision to continue growing into China’s future. In the meantime, they are helping a generation of young creatives make their dreams a reality (Taobao 2018).

Taobao / Alibaba works on the spreading of its support of makers and therefore on the development of its business ⁵⁰.

The maker culture is also expressed and spread through other events such as Science Hack Day in Shanghai, a yearly event; Gathering for Open Science Hardware (GOSH) which takes place in different locations for its yearly event, which took place in Shenzhen in 2018; Fab12 which also takes place yearly in different locations and was in Shenzhen in 2016; and bar camps, such in Shanghai at New York University in 2017 for example. Fab12 was an important event for and in Shenzhen. Shenzhen Industrial Design Profession Association (SIDA) and Shenzhen Open Innovation Lab (SZOIL) were the local organizers of the reunion. Shenzhen is part of the Fab City Network since FAB12 where Neil Gershenfeld described Shenzhen and its SEG Market as a paradise (Fab12 conference, August 2016), while Shirley Feng, Secretary General of SIDA and co-founder of SZOIL says: “Shenzhen is the last frontier for makers or makers is the last frontier for Shenzhen”, and also “Shenzhen is the dream factory of makers” (Fab12 conference, August 2016). The new identity – this paradise for makers – and the potential to change the vision of manual work towards a positivity and attractivity are beneficial for the city’s image and for its businesses. The maker culture expressed and instrumentalized through different events and approaches gives the opportunity for new businesses to flourish and for a rejuvenation of the cities’ narratives. The following table summarizes the makerspaces in each city and the type of events taking place.

⁵⁰ Interestingly but in a different way, Tencent has been sponsoring panel on Chinese culture and creativity: “Youth’s Digital Diversity and the Sharing Economy in the New Era of National Sovereignty” and “The revitalization of traditional culture in the digital era” at the World Humanities Conference 2017 in Liège, Belgium. The soft power and development of these companies is not limited to China.

	Makerspaces	Makerfaire	Maker carnival	other
Shanghai	XinCheJian XinFab Mushroom Cloud Coderbunker Innomaker+		since 2012 (<i>main organizer Mushroom Cloud</i>)	Hackdays Bar camp
Shenzhen	SZOIL x.factory / Chaihuo (Lab0) Litchee Lab	since 2012 (<i>Main organizer x.factory / Chaihuo</i>)		Fab 12 (2016) GOSH (2018)
Beijing	Fab Lab Atelier Q-space Beijing makerspace	From 2015 to 2018 (<i>main organizer : government</i>)	From 2012 to 2014 (<i>main organizer Beijing makerspace</i>)	

Each city has its own identity in terms of makerspaces (bottom-up or co-opted), and events (bottom-up, co-opted, top-down or independent). These temporary spaces of events are part of the reflection on liminality and platformization of places, which will be discussed in the next sub-chapter.

SPACES OF THE IN-BETWEEN

Liminality of places

As much as some people push for change, structures in the world are changing and people accompany the movements. Places like makerspaces can be trampolines for changing one's life. Urban spaces embracing the idea of liminality - and therefore creating a unique encounter between the city and new forms of working, of thinking and of creating - are of high interest. We are going one step further, applying the concept of liminality - formerly focusing on people - to the city.

Van Gennep and later Victor Turner, the fathers of this concept, defined liminality as an in-between which individuals go through during a ritual, a "neither here nor there; [...] betwixt and between the positions assigned and arrayed by law, custom, convention, and ceremonial" (Turner 2011: 95) Liminality is an ambiguous or disoriented moment before the transition of an individual. As Thomassen, Professor in Global Political Sociology in Denmark, writes liminality is un-structuring and re-structuring: "While liminality is "unstructure", a lack of fixed points in a given moment, it must at the same time be considered the origin of structure" (Thomassen 2009: 23). Szakolkczi,

Professor and research in social theory, sociology and anthropology in Ireland, underlines the fluidity of a liminal moment allowing the malleability of situations and therefore the establishment of new institutions and customs (Szokolczai & Thomassen 2019: 231). Makerspaces, which can be ephemeral in their existence due to financial sustainability and to the stability of its community (changing interests, moving, lack of time etc.), can nevertheless be part of the transition and transformation of its members or participants as well as of urban structures. There are numerous ways to describe and use makerspaces (see Chapter 2). Linked to its ephemerality, fuzziness and multiple functions, makerspaces are places and spaces of transition which can be mainly, but not exclusively, found in urban infrastructure and above, in an era of the Internet, with an ambiguous or transitive role. They are “Fourth places”(Morisson 2018) at the friction point of work habits, lifestyle, hobbies. Makerspaces have become spaces which welcome people simply sharing similar interests or with an aim to realize a project. They are often a platform for networking, sharing and learning, as well as a liminal place. Shortt, associate professor in Organization Studies in the UK, shares a critical view on the concept:

Spaces like these [liminal spaces at work] are used and made meaningful. [...] we must therefore acknowledge a shift from ambiguous space to meaningful place. If we simply define these spaces as liminal it suggests they are abstract or conceived spaces and denies the fact that individuals experience them. As a result, liminality is perhaps more complicated than has been treated by other writers and is more nuanced than first thought. By drawing on the temporary and transitory characteristics of liminal space and simultaneously recognizing that these spaces are ‘lived’ and re-constructed as dwellings by those who frequent them, we might better describe such spaces as transitory dwelling places (Shortt 2015: 655).

Shortt uses the notion of “transitory dwelling places” as they allow a shift from ambiguous and unclearly defined places to meaningful places which are then experienced by individuals. In the case of makerspaces, liminality and ambiguity give an opportunity of redefining the place the way it is individually needed or aimed at. Spaces and places of making are transitory dwelling places in the framework of work creation and re-organization, they are liminal, transitory and temporary.

In addition to the function of liminality, makerspaces have different levels of interaction. Smith, Professor of Technology and Society, in Sussex UK, and al. suggests three “inter-relating makerspaces levels”: user-projects, local-makerspaces and networked communities (Smith et al. 2013: 12–15). To these three levels of interaction, the level of platformed makerspaces can be added for the makerspaces in China, and more specifically in Shenzhen (see next page).

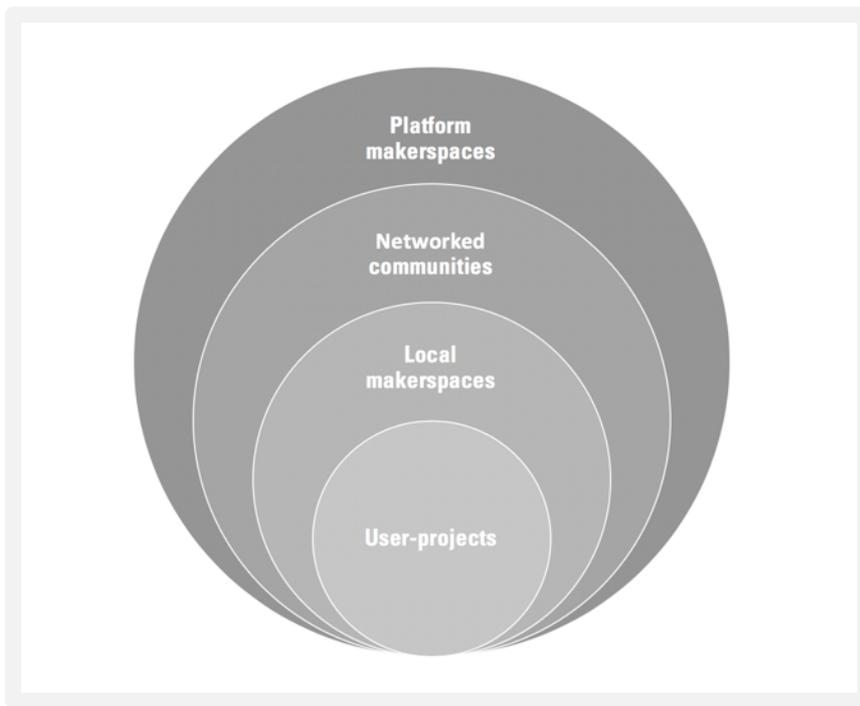


FIGURE 66:

Inter-relating makerspaces levels by Smith, completed by author (2019)
 © author (October 2019)

Drawn based on Smith (2013)

Their welcoming function goes below the concept of networked communities as people going to the makerspaces welcoming them to realize ideas, projects or businesses are not necessarily part of any community. In the case of Shenzhen Open Innovation Lab (SZOIL) and x.factory, there is no consistent online or offline community. The space exists and is open for workshops, events, delegations and other educational or entrepreneurial events but without a consistent participation type. The constant transitive aspects of these makerspaces are an opportunity of renewal and of recalibration of the development of projects. The dynamics of Shenzhen are too active to be settled. The city, turned towards the world through its history of industrial production and export, continues having this function in all aspects of its urban identity and space production. Makerspaces are spaces of rituals, bringing a new ritualization of space or new spatial rituals in work and tinkering culture. The Internet has enhanced information exchange, finding people with similar interests and discovering the places to go to. Makerspaces are online and offline platforms thanks to its online accessibility. Anderson describes makerspaces as “spaces of future” (Anderson 2012). Without reaching the denial of individual experience of space as suggested by Shortt, which could be linked to Augé’s understanding of “non place” (Augé 1995). Makerspaces are liminal spaces allowing diverse communities and voices to come up. They disrupt or defy the

system at the same time as they (re)integrate it to feed it. When being part of the system and re-integrating it, it loses part of its power of liminality and closes the loop. The makerspaces and maker world are all about connections. Connecting people, projects, objects and systems allow the maker culture to have a meaningful impact through its liminality.

Connectivity, mobility, fluidity – cities

Cities, spaces and places are mobile through the connectivity of its actors and the dynamics in which they are evolving. Complex new dynamics of empowerment through consumption or resistance, contestation, freedom or any appropriation of the spaces are carved in the idea of flows. In this logic of identity-building, space-appropriation and network-creation, which seem to be borderless, the reflection on and around creativity and innovation seems appropriate as fluidity and mobility create exchanges, new thinking and enhance its rapidity:

[...] the mobility of individuals, goods and ideas is at the heart of the global changes that are affecting all aspects of economic political and social life. In addition to environmental issues that range from atmospheric and sonic pollution to in-ground waste and energy consumption, changes in mobility are also resulting in some cases in unprecedented issues regarding social and spatial cohesion, as well as the cognitive management of information and increasing societal friction (Kaufmann 2011: 2)

In the rethinking of the mobility and what has been called the “mobility turn”, Urry, British sociologist, suggests two kind of networks: the “global network” which is a “network of technologies, skills, texts and brands ensuring that more or less the same product is delivered in more or less the same way in every country in which the enterprise operates. Such products are produced in predictable, calculable, routinized and standardized environment” and the “global fluids” which are the “the heterogenous, uneven and unpredictable mobilities of people, information, objects, money, images and risks, that move chaotically across regions in strikingly faster and unpredictable shapes” (Urry 2000). These networks, and specially the second one, include the notion of fluidity, which has been discussed widely by Bauman, Polish-British sociologist. What are the characteristics of fluidity?

“Fluids travel easily. They “ow”, “spill”, “run out”, “splash”, “pour over”, “leak”, “flood”, “spray”, “drip”, “seep”, “ooze”; unlike solids, they are not easily stopped – they pass around some obstacles, dissolve some others and bore or soak their way through others still. From the meeting with solids they emerge unscathed, while the solids they have met, if they stay solid, are changed – get moist or drenched” (Bauman 2000: 2).

Therefore, does it mean that fluidity, associated to networks, mobility and societies, is an absence of any constraints? Is the fluid or mobile society interconnected or just free? According to Kaufmann, Swiss Professor in urban sociology at EPFL, the fluidity debate is not about moving from one social category to another but “it has to do with all the barriers and constraints an

individual faces throughout his life and his room for maneuver within these boundaries” (Kaufmann 2011: 135).

In this thinking or rethinking of space and mobility, Castells, Spanish-American sociology and urban planification professor, thoughts on the “space of flows” are also to be considered. According to him, this space allows the simultaneity of social practices without territorial contiguity:” it is made up of 1) a technological infrastructure of information systems, telecommunications, and transportation lines” 2) “the space of flows is made up of nodes and hubs” and of 3) “habitats for the social actors that operate the networks” 4) it “comprises electronic spaces such as websites, spaces of interaction” (Castells 1999: 295–296). If we look at these elements of mobility in the city, the essence of it would be the network allowing, through technology, a certain fluidity with the risk of elements escaping or being lost in the fastness of the current world. So how is mobility used or abused? How are these networks understood and created to have new spaces and places in cities? What is the position of the citizens in these fluid networks? Larsen and al. suggest to look at “network capital”, which means the “capacity to engender and sustain social relations with people who are not necessarily proximate and which generates emotional, financial and practical benefit. It seems particularly crucial to study how the relational possession of this capital is crucial for connecting people, that is, to produce “social capital”” (Larsen et al. 2008: 656) to understand better the impact of this questioning.

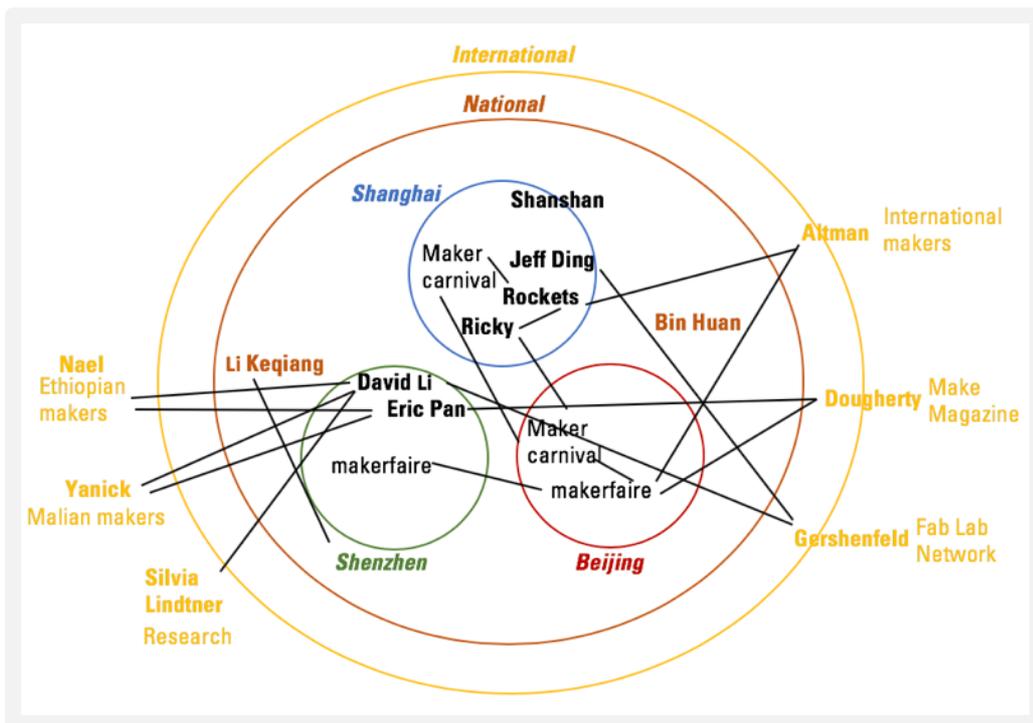


FIGURE 67:

Inter-relating networks and pivot people
 © author (October 2019)

In the context of the Chinese makers, there are several types of networks, local (between spaces/people in one city), local-national (between spaces/people in different cities), national (between spaces/people and the larger maker ecosystem) and international (between spaces/people and spaces in the world). The network is rooted through specific (pivot) people and allows its spreading and embodiment in places. XinChejian has, for example, the role of a matrix, from which other places were born: XinFab, Mushroom Cloud, Coderbunker, Innomaker+ or SZOIL. These places are not competing between each other but enriching and expanding the maker culture: Mushroom Cloud is for example the only makerspace in Pudong area, or Coderbunker is a coding and co-working space without any machines, and therefore attracting another type of members.

CONCLUSION

The Chinese urban fabric, with its history, narrative and infrastructure, is fertile ground for experimentation. National and international dynamics meet in the mega-cities of Shanghai, Shenzhen and Beijing, with Chinese, Chinese who lived abroad and bring back their experiences, and foreigners coming to China to learn and discover. In China, the top-down approach seems to dominate, but the actual dynamics are a game between top-down frameworks and bottom-up initiatives and stakeholders finding ways to profit from the frameworks given. In the case of the makerspaces, they have been appearing in China since 2010 and had to negotiate in each city their position.

At the same time as the Chinese government focused on innovation and on creative clusters, and therefore opened opportunities for makerspaces to exist, the latter were wrenched in the cities. Creative clusters are part of the path to fulfilling the urban dream of China with its dynamic economy, independent but driven citizens working for the values and objectives of and in the name of the country. The urban ideology is strong.

Based on the fieldwork, I claim that makerspaces are nevertheless not exclusively part of planned creative clusters belonging to the Chinese urban fabric. They insert themselves in the urban fabric in many different ways and places, and found a niche that enabled them to be recognized in Chinese politics. The top-down initiative of the government went to the municipalities and cities, which implemented it depending on their local infrastructure and interpretation. Each city developed local strategies and interpreted top-down initiatives uniquely. Each city developed urban identities as a result. Shanghai has remained a more hobbyist maker culture and Shenzhen has become a more professional and platformed maker culture. Beijing, being the capital, has on one side more alternative spaces, and at the same time more professional makerspaces. This combination is due to its political positioning and its need to follow the rules more specifically.

Makerspaces are part of the urban fabric's intensity in China. They may be ephemeral and marginal but their networks are international and can create many dynamics and new projects on local, national or international levels. The appearance of platform makerspaces, especially in

Shenzhen also give additional dimensions to the culture, which opens up the city and fluidifies the networks. African makers are, for example, benefitting from the accessibility through the internet of information, knowledge exchange and prototyping through the Shenzhen maker culture.

扩展和影响

Kuozhan he yingxiang

Maker communities support and foster open innovation and empowerment globally. They create new types of collaborations students to implement their visions. The Chinese maker movement achieves a national and international outreach through its members, projects and events. Projects and members' profiles make the studied spaces international. Developed and developing countries are looking at China, and more specifically Shenzhen, as a model of innovation, economic renewal and industrial production. Shenzhen's re-branding is internationally recognized. Developing countries are particularly interested in learning from Shenzhen. The impact of Chinese makerspaces is not limited to China. The interest of local Ethiopian entities (makers, government, etc.) in such technological exchange is one example of the global outreach of Chinese technologies and ideologies through innovation communities based in Shenzhen, the first Special Economic Zone (SEZ) in China. The city's identity is linked to creativity and innovation (O'Donnell et al. 2017). Organizations like the Shenzhen Open Innovation Lab (SZOIL) and x.factory have benefited from the Chinese national interest in projects involving multidisciplinary exchanges, open innovation, and possible entrepreneurship. The projects introduced in this chapter are grassroots projects, which find connections with the interests of organizations and governments. The Chinese maker "chuangke" has an imprint on global maker projects linked to local Chinese makerspaces.

Two people with whom contact was made during the research were the inspiration for Chapter 6. The main project, presented here, is "Designed in Ethiopia", which was created after the author met Nael Hailemariam, an Ethiopian studying in China, during a visit to the Shenzhen Open Innovation Lab (SZOIL) in 2016 and led to a visit to Ethiopia early 2018. The bottom-up and top-down intricacy in Ethiopia, and between Chinese and Ethiopian makers is captivating. The second project briefly presented here is "Kabakoo Academies", based in Mali, whose founder, Yanick Kemayou, the author met at the Global Summit on Community Biotechnology at the MIT Media Lab in October 2018.

This chapter will succinctly introduce contextualizing elements of China-Africa relationships that are complex and ambivalent, and the "Designed in Ethiopia" project and the "Kabakoo" project. The objective is to reveal paths of empowerment and show how to leave the national Chinese context within the topic of the makerspaces in China using mixed data from Facebook, LinkedIn or WeChat pages of Chinese and Ethiopian makers, as well as formal sources from Ethiopian and Chinese governments.

CHINA – AFRICA: A CONTEXT

Chinese-African relationships are part of a shift of world powers and wake distrust. Lee, Hong Kong American Professor of Sociology at the University of California, starts Chapter 1 of her book “The Specter of Global China: Politics, Labor, and Foreign Investment in Africa” with the following words:

A specter is haunting the world – the specter of “global China.”
An economic powerhouse of vast proportions, China has reached an expansionist moment after more than three decades of sustained growth. Over-capacity, falling profit rates, underconsumption, shrinking demand from traditional export markets, and scarcity of strategic resources are major imbalances that have driven Chinese corporations, workers, and entrepreneurs to go abroad in search of new opportunities. Since the early 2000s, encouraged by Beijing’s “going out” policy, Chinese outbound direct investment has grown from virtually nothing to about USD100 billion per year in 2015, making China the world’s third-largest source of foreign direct investment (FDI) (Ching Kwan Lee 2018: 1).

The global shift of power is discussed by researchers, politicians and also journalists. Among his books, French, journalist and Professor at Columbia University Graduate School of Journalism published: “China’s Second Continent: How a Million Migrants Are Building a New Empire in Africa” feeding the discussion of the “burgeoning presence” of China in Africa, “shaping, and reshaping” the continent (French 2015).

The most famous current initiative is the Belt and Road (BRI) one, which is feared, welcomed and sometimes not well understood at the same time. The positive and negative consequences are continuously under discussion. Nevertheless, since the focus of this thesis is on Chinese makerspaces, there is no space here to develop a political analysis. This sub-chapter illustrates the context of these relationships and projects in order to be able to underline the exceptional dynamic and people involved in the grassroots projects presented afterwards.

China towards Africa

China is a major investor in Africa for business and development. Due to the comparatively low benefits of SOEs in some sectors, the private sector will be encouraged by state reforms pushing for “mixed ownership” which means partial privatization, while maintaining SOEs as the backbone of the economy (Pei et al. 2019: 126). Making the economy more efficient and the development of the country more sustainable is one important aim of the latter (Xinhua 2014b).

On the way of expected reforms that will presumably redefine the balance of powers, the responsibilities and opportunities will have to be discussed. State ownership remains especially strong in areas such as finance, education, health and telecommunications, which offer the greatest potential gains in productivity and employment (Xinhua 2014b). In the fourth chapter of

the 13th 5-year plan of China, with the title “Opening up: vital for China’s prosperity and development”, China shares its aims of diversification, global integration and expansion:

In adapting to China’s ever-deepening integration into the world economy, we will pursue a mutually beneficial strategy of opening up, coordinate the role of domestic and foreign demand in stimulating growth, balance imports and exports, stress the importance of both bringing in and going global, and work simultaneously to attract foreign investment, technology, and talent. We will achieve a higher level of openness within our economy, participate actively in global economic governance and the global supply of public goods, seek a greater say in the institutions for global economic governance, and look to build more international communities of interests (Central Committee of the Communist Party of China 2016).

As written earlier, the first problematic step for China is the definition and difference between the private and public sector as well as their potential influence and power in the domestic and global market. While a mere investment decision is not sufficient for a positive impact, the host country also needs to be open for investments (Drogendijk & Blomkvist 2013: 82).

There is no unique ‘Chinese model’ of overseas cooperation and each country has to negotiate and develop politics and policies taking into account the possible positive and negative effects:

The idea of China as a model for prosperity has captured the imagination of many ordinary Africans, although others fear the threat of competition from the Chinese industrial juggernaut, and the rise of Chinese traders competing at the entry level in local African markets. On the one hand, we see excitement and anticipation; on the other, unease about Chinese aid and state-sponsored economic engagement” (Brautigam 2009: 10)

African officials have visited Chinese Special Economic zones, especially Shenzhen, aiming to learn from the “Chinese model”. Yet, the challenging aspect is then also to expand the model in their own countries (Bräutigam & Xiaoyang 2011: 48). Chinese-Africa engagements are more complex and varied than the current political and politico-economic agreements. Chinese migrations are indeed not limited to the recent investments in African countries but have clearly grown with different forms of presence: tourism, peacekeeping, development aid, trade and investments (Kragelund 2009: 479). Historically, other forms of entanglements were taking place: “embedded in the social mediation of objects and substances, and for instance, in farming and therapeutic practices (Ferre & Schmitz 2014: 22).

Despite the historical and multitude of interactions in the Chinese-African relationships, we will focus on the Belt and Road Initiative as it represents the political context in which Chinese and African makers cooperate.

Belt and Road Initiative

The “Belt and Road Initiative” (BRI) is redefining Chinese foreign policies and international relations under the umbrella of an inclusive model of cooperation: “At the Belt and Road International Cooperation Forum Chinese President Xi Jinping said that China will not interfere ideologically in other countries, will not export its own model of development, concentrating instead on mutual benefit, win-win, jointly making the cake bigger and jointly sharing it” (Liu et al. 2018: 1211).

In 2013, President Xi originally expressed the concept of the “Silk Road Economic Belt” *sichou zhi lu jingji dai* 丝绸之路经济带 (Sidaway & Woon 2017: 591) (Sidaway & Woon, 2016). The first Belt and Road Forum for International Cooperation (BRFIC) “*yidai yilu*” *guoji hezuo gaofeng luntan* “一带一路”国际合作高峰论坛 took place in May 2017 and the second one in April 2019, both in Beijing. The initiative reinforces ties with countries where China invests, builds infrastructure, gives loans, develops trade or relocalizes manufacturing. The map (figure 63) by the Mercator Institute for China Studies (MERICS) updated in 2018 reflects the ambitious development of liaisons and infrastructural networks between China and Asian, African, and European countries.

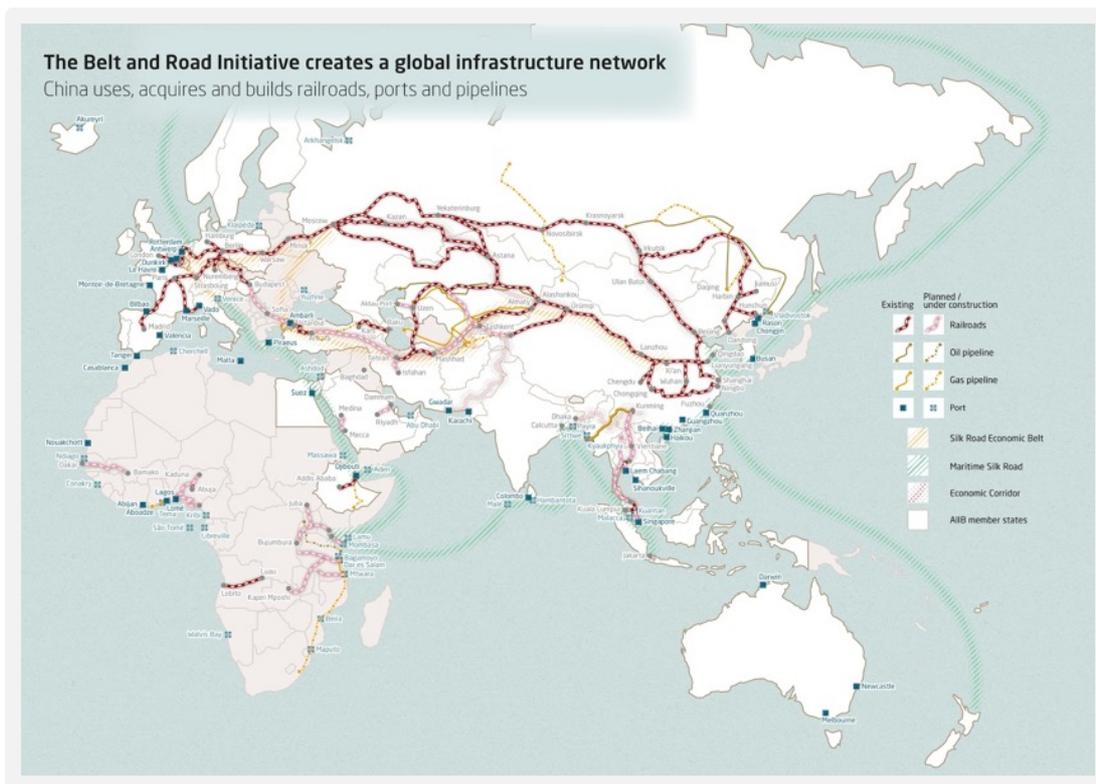


FIGURE 68:

The Belt and Road initiative creates a global infrastructure network
© T. Eder, MERICS (2018)

Reproduced with the kind permission of T. Eder at MERICS

The BRI demonstrates the economic power and importance of China, especially for African countries, even if many projects started earlier. Along with the evolution of trade and Foreign Direct Investments (FDI) (Pigato & Tang 2015), Chinese loans to developing countries are widely discussed. One of the challenges to the discussion is that there are no official Chinese data on these loans. The China Africa Research Initiative (CARI) of the Johns Hopkins School of Advanced International Studies has collected information formally and informally in an estimation and shows that from 2000 to 2017, Chinese entities (government, banks, contractors) provided USD 143 billion in loans to African governments and state-owned enterprises (SOEs) with a peak in 2016 (Chinese Africa Research Initiative 2019). CARI website also explains that the US is a larger donor than China in African countries, which is important to underline since it is believed that Chinese loans dominate on the African continent.

While loans are welcomed and used to develop infrastructure and business, they attract criticism as well. Former diplomat and the CEO of Development Reimagined in Beijing, Hannah Ryder, writes in the Diplomat's article "Are Chinese Loans to Africa Good or Bad? That is the Wrong Question: The right question is what African leaders will do to demand what Africans need? [...]" Indeed, African countries seem to be stuck between a rock and a hard place; unable to access favorable loans from others, and tied loans from China" (Ryder 2018). Ryder also suggests that there might be a solution coming from China with the establishment of the Asian Infrastructure Investment Bank (AIIB) in Beijing in 2016. She underlines that it is time for African countries to position themselves by demanding what they need and to other countries, including China, to work towards these needs. At a meeting in Beijing in 2016, Ryder also mentioned the importance of reciprocity and not only the access of China to African countries but also the access of African countries to China (Interview Hannah, CEO of Development Re-Imagined, August 2016). There are 54 African countries part of the BRI including Ethiopia. Keeping a balance between partnerships with different countries and with Addis Ababa being the diplomatic capital of Africa, the country has positively positioned itself in the Horn of Africa region (Cheru 2016: 605). Therefore, exploring experimental educational and entrepreneurial projects in Ethiopia are stimulating.

DESIGNED IN ETHIOPIA

The project "Designed in Ethiopia" was born with the cooperation of an Ethiopian student in China, an Ethiopian startup in Addis Ababa, Shenzhen Open Innovation Lab (SZOIL) in Shenzhen and later the Ministry of Science and Technology in Addis Ababa. This sub-chapter is divided into four parts: first the political context of China-Ethiopia relations, then the link between the makers, the project and finally a reportage on it.

China-Ethiopia

Mutual engagements of China and Ethiopia are various. According to the World Bank, Ethiopia is the second most populated country of Africa and also one of the poorest with an income per capita of USD 783 (World Bank, 2016). Its economy is strong and growing around 10.3% (average) a year from 2006/7 to 2016/7 (Ibid.). The World Bank also mentions the challenges of limited competitiveness, manufacturing and lack of jobs with an underdeveloped private sector and a risk of social unrest. Nevertheless, "Ethiopia has experienced the fastest economic growth in Africa over the past decade, despite having no oil or other strategic resources" (Cheru 2016: 605). In its international positioning strategy, Ethiopia has joined the China-based Asian Infrastructure Investment Bank AIIB in 2017. As Breuer, a research assistant at the Department of International Political Economy of East Asia at the Ruhr-University of Bochum underlines, Ethiopia and Egypt are the two African countries that are members of the AIIB in 2017 (Breuer 2017: 3).

Economically, Ethiopia is dependent on international trade and cooperation (MIT Media Lab 2019). Foreign investments are needed and China's role is therefore essential in Ethiopia's political and economic plans.

Despite its challenges, Ethiopia has young and proactive students and entrepreneurs working towards advancing digital technologies, innovation and empowering projects such as bluemoon - an agribusiness incubator, iCog Labs - AI software professionals - and projects such as "Designed in Ethiopia" launched between communities in Shenzhen and Addis Ababa winning the support of local governments. The projects and young companies are at the intersection of bottom-up and top-down dynamics.

Chinese and Ethiopian makers – connections

Ties are growing and new projects are launched through individual members of open innovation communities. In this context, Shenzhen has developed a unique entrepreneurial side, in which *chuangke* 创客 is interpreted with all the aspects of the translation englobing the concepts of making, entrepreneurship, business, industry etc. As Wang explains and already mentioned earlier, Chinese makers are facing a double identity, the one of "maker entrepreneurs" and of "change-making citizens" (Wang 2016: 59). As the maker movement or culture seems to fade in China, the marginal movement sparkles with impact through projects across the world. And Wang Jing's definition is even more deeply experienced in African countries with the need to transform the countries' economy and society, a and empowering youth.

Thanks to the presence of Nael, the Ethiopian student, in China and to his collaboration with David Li from SZOIL, the collaboration has grown from a grassroots dynamic. In 2017 and 2018, Belt and Road forums for international maker cooperation took place in Shenzhen co-organized by SZOIL. For the first conference, Hruy Tsegaye, project manager at iCog Labs, was invited. As a

former journalist, Hruy shared his experience on iCog Labs webpage with the title “Silent China, Loud China: iCog Makers’ Long March” (Tsegaye 2017) (an extract is presented on p. 260-261). Another guest speaker pictured on figure 64, is Robin Wu, considered by some as “Shanzhai King”, he is a successful entrepreneur who is investing in Ethiopia: “Mr. Wu set up the electrical products manufacturing business with partners who employ 20’000 people and manufacture shoes etc.” (Takasu 2017). The makers’ platform in Shenzhen, with the impetus from individual makers or maker communities, has been opening doors for a transnational bottom-up and top-down dialogue on development ideas and cooperation.



FIGURE 69:

Belt and Road summits and maker cooperation with Ethiopian speakers in September 2017
Screenshots © author (October 2019)

Source: SZOIL’s medium blog and Facebook page

As mentioned earlier, Hruy Tsehay, shares about his cultural impression including the language challenge, the importance of WeChat and the discovery of the maker landscape. His testimony is unique and important in the understanding of the dynamics described.

[...] The message he sent was written in Chinese Characters and I stared at him with the most perplexed face a man can pull toward a perfect stranger signaling HELP. He understood instantly that like many travelers to China, I just installed WeChat, probably on my way to the airport, and that I am not familiar with the numerous super cool, and most helpful features of

that app. He grabbed my phone and indicated I should lean forward and observe what he was doing. He long-pressed the text he just sent and options appeared on my WeChat screen. Among the options, 'Translate' caught my attention in a way a crocodile sees a gazelle leaning at the mouth of its hid-out river. After this trick, everything changed and in the remaining seven days, adding the WeChat number of the restaurant waiters and the grocery shop owners I visited became my first priority. [...]

The city, even though has more than 11 million people, is one of the cleanest, less crowded, and calmingly silent city I had ever seen. Most importantly, the people are polite and so friendly. My Mandarin is as good as my quantum physics so I only know one word and it is 'ni hao', which means 'hi' or 'hello' and am not even sure which one of these is it exactly. Yes, 'hi' or 'hello', basically, are the same but I don't know if I am allowed to say 'ni hao' over the phone. Perhaps, asking a stranger via signs and gestures which bus goes to a certain place might be easy for me, but answering it after understanding the question is a task only the divine above the heavens can endure. Starting from day two, I became one of the actors from the era of the silent movies— to make matters worse, am not a good actor. After I stopped the first stranger, I would begin my dancing and miming session. It will take three to five minutes of ridiculousness and the stranger will patiently wait. If the stranger understood, s/he would help me, if not the stranger would ask for more explanation! [...]

Compared to Shenzhen, Addis Ababa has roughly 5 million people but the city is one big super-noisy dirt potty. Finding green, in Addis, is a legend worthy of its own Epic yet, unfortunately, one is bound to end up with Elegy. Upon further inquiry, I was told that with the exception of Shanghai, Beijing and Hong Kong, many of the Chinese city are like that; friendly people, green, clean and quiet streets, and less crowd. Furthermore, Hong Kong, according to my sources, is full of rude and snobbish people toward strangers—good job England! [...]

In the afternoon, I took a bus to Sino-Finnish International Maker Community [where SZOIL is located]. The orange colour of the newly built maker park struck me; our very own iCog Makers theme colour is Orange. The Shenzhenites built the place to provide ample space to old and new Hackerspaces/Makerspaces/Fab Labs/Techshops. At times these four terms are used interchangeably and at times there is a slight difference in their meaning (designing and building things from scratch is often associated with Makerspace while Hackerspace is a place for repurposing already existing software/hardware). No matter what the meanings are, I was told that the Sino-Finish Maker Community park is open for all of them. [...](Tsegaye 2017).

Tsegaye was invited to the first Belt and Road Summit by David Li (SZOIL) and Nael. His first impressions of Shenzhen, and also China, enrich the narrative on the Chinese city and the relationship between non-Western countries. The second Belt and Road Forum was already more refined in its dialogue on a political level as it involved the Consul General of the Federal Democratic Republic of Ethiopia, Teferi Meless DESTA, in the official addressing as well as partners from other countries such as Kenya, and Nael Hailemariam, one of the initiators, as mentioned earlier of the Designed in Ethiopia project.



FIGURE 70:

Belt and Road summits and maker cooperation with Ethiopian speakers in October 2018 screenshots © author (October 2019)

Source: SZOIL's medium blog and Facebook page

While the 2017 and 2018 Belt and Road maker cooperation conferences brought new perspectives and a certain institutionalization of the dialogue, no forum or conference took place in 2019. At the moment, the dialogue between the Ethiopian government and the project has slowed down.

The project

“Designed in Ethiopia” is a new model of Ethiopia and China collaboration where Chinese expertise and resources are integrated to springboard African innovative young talents to become world-class entrepreneurs. Through the program, young Ethiopian entrepreneurs learn how to leverage the resources, expertise, production, and logistics of Shenzhen with the Chinese experts so they can take their ideas to products. The initiative empowers young Ethiopians to leverage the production capabilities and expertise of China to design products in and for Ethiopia. The products once proven in Ethiopia could later be distributed to other parts of Africa. The University of Michigan School of Information Assistant Professor Silvia Lindtner and research fellow Seyram Avle, who research global maker and DIY cultures have also a positive view on the benefit of young African entrepreneurs being involved in the Shenzhen ecosystem (see following sub-chapter “How Shenzhen is fueling Ethiopia’s burgeoning startup scene”).

Shenzhen-based entrepreneurs see Africa as a continent that will be developed in the near future, and that welcoming African entrepreneurs to Shenzhen would have a great impact. “Designed in Ethiopia” is the beginning of a new model of China and Africa collaboration. The engagement of talents empowers young Africans to closely collaborate with Chinese and learn from the experience so they can make a leap in their development. “Designed in Ethiopia” is the first program to demonstrate how Mass Entrepreneurship can work with the Belt and Road Initiative and therefore the reason why it was chosen here. As described in the Routledge Handbook of the Belt and Road:

[...] the Belt and Road Initiative provides an incubation platform for “mass entrepreneurship and innovation”. The achievements in innovation-driven development depend not only on the height of technological innovation but also on the breadth and depth of “mass entrepreneurship and innovation” (Zhou 2019).

On the following page, a timeline of the project development and the involvement of the author is represented.

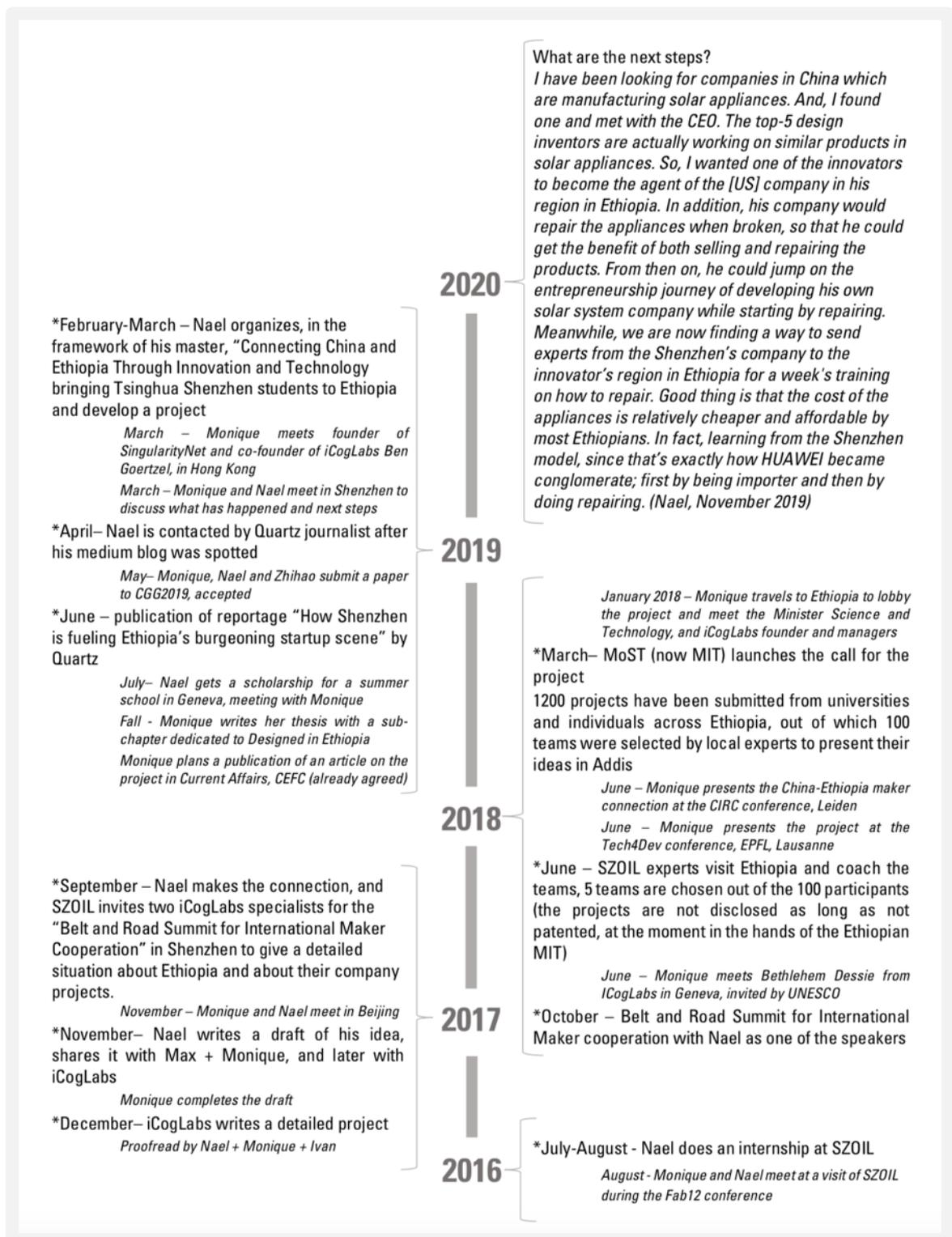


FIGURE 71:

Timeline of the "Designed in Ethiopia" project with the activities of the author

© author

The Ministry of Science and Technology of Ethiopia (MoST) has launched a call for application in 2018 shortly after the author's visit to Ethiopia. The extracts of the call, shown on the next page, are visually symbolic and important. The oral language of the call is Amharic (local - Ethiopia), the title of the project is English (global) and the urban images are from Shenzhen (China). The ideal or the model of this experimental competition is Shenzhen.

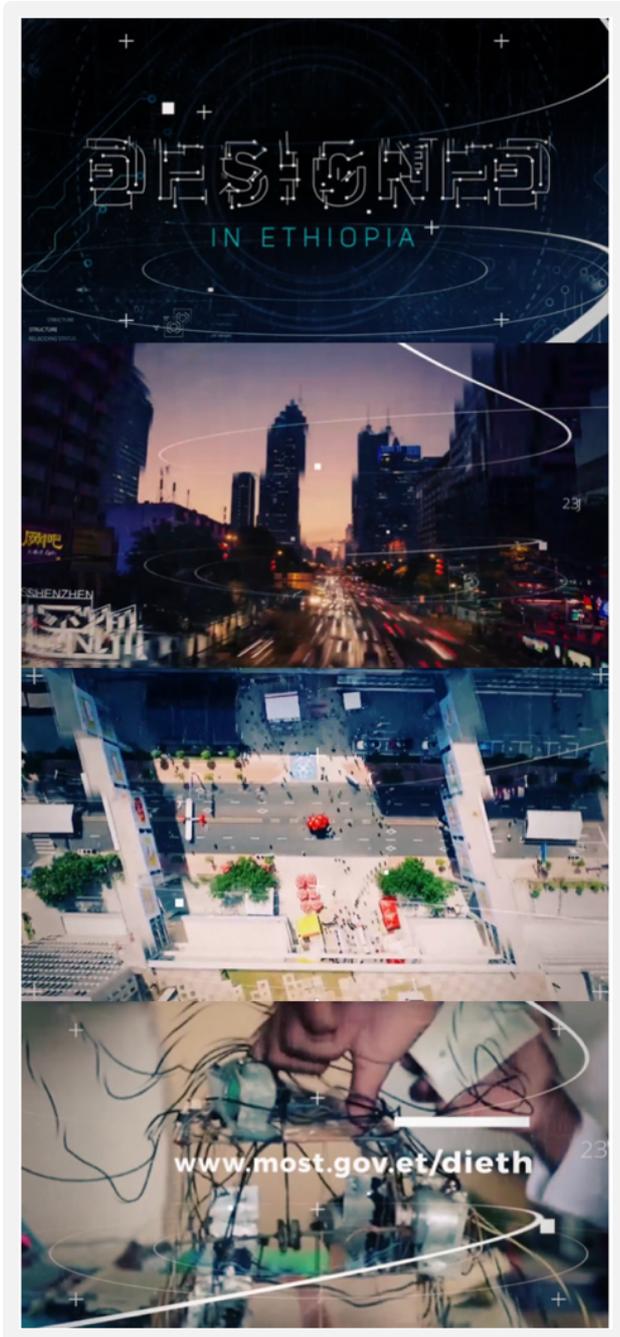


FIGURE 72:

"Designed in Ethiopia" call for teams by the Ethiopian government in March 2018
Screenshots © author (October 2018)

Source: Designed in Ethiopia on <https://www.youtube.com/>

The screenshots below are taken from iCogLabs and Ministry of Science and Technology (MoSt, now MIT) of Ethiopia Facebook pages, which published in June 2018 pictures of the team of experts composed of Chinese and Foreign entrepreneurs based in Shenzhen. The experts trained the teams in Addis Ababa and participated to the selection of the finalists. This is the last official news of the project.

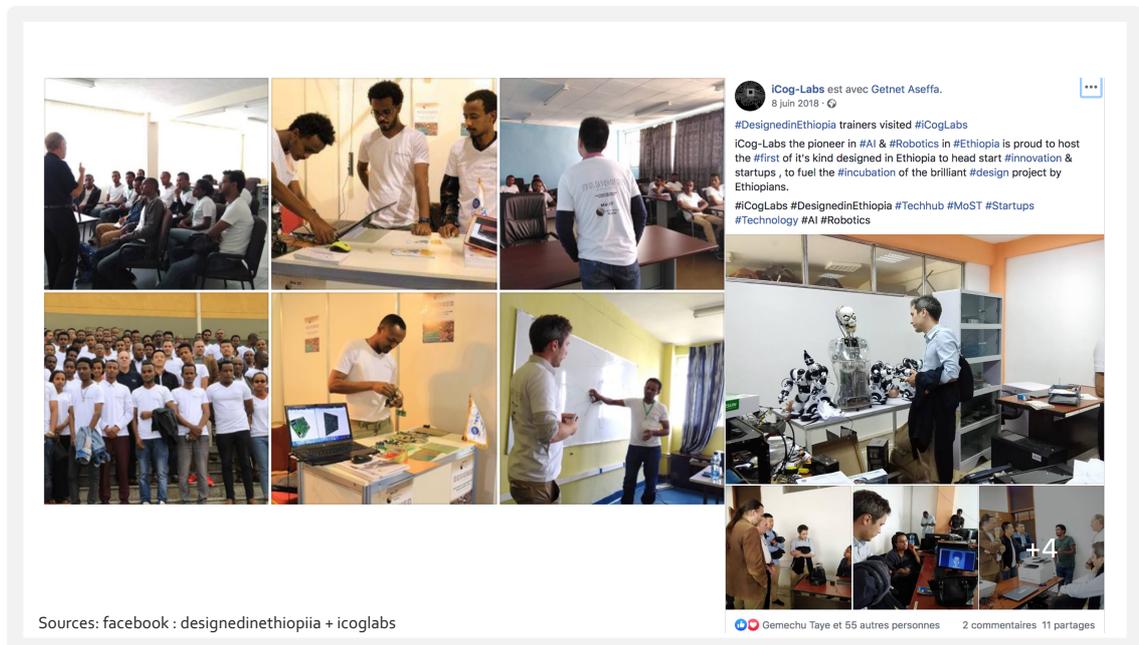


FIGURE 73:

iCogLabs and Ministry's "Designed in Ethiopia" Facebook pages on the event (2018) Screenshots © author (October 2018)

Source: Designed in Ethiopia and iCogLabs Facebook pages

The project "Designed in Ethiopia" has an objective to deepen the understanding of the social impact of similar collaborations on new job opportunities and addressing community-oriented problems with globalization potential. Regional universities in Ethiopia host trainings and competition for the best innovative ideas, and with the highest social impact. The selected teams of the competition learn how to create a minimal viable product (MVP) using the infrastructure of the city Shenzhen guided by the expert community of SZOIL.

More projects have taken place following the launch of the first, such as "Connecting China and Ethiopia through technology" with a group of Tsinghua students visiting Ethiopia in the framework of the Open Fiesta Master students at Graduate school in Shenzhen, Tsinghua University. The objective was to facilitate the exchanges of aspiring young Chinese and Ethiopian entrepreneurs to build a platform for future collaboration. Also, the Minister of Science and Technology has expressed its interest to collaborate with SZOIL to build an innovation center and possibly develop a network of Fab Labs in Ethiopia. The new center would englobe the open innovation ecosystem

of Shenzhen to create an environment for new generation of entrepreneurs to experiment with new technologies, create prototypes, and pursue business opportunities. It will also be an example of a self-sustainable innovation center that could be easily replicated into universities and communities to support technologies driven grassroots entrepreneurship. The movements of making, hacking and do it yourself (DIY) facilitate exchanges between countries through the interests of makers and small entrepreneurs.

Not only are they growing out of bottom-up initiatives, but also meeting the enabling top-down frameworks provided by international policies. Innovate with Shenzhen could be a way to build a mini-Shenzhen ecosystem in Ethiopia. "Designed in Ethiopia" rethinks how products are invented and mass-produced. (Discussion Nael, co-initiator of Designed in Ethiopia, former SZOIL intern, May 2019).

The Chinese presence in Ethiopia in "making" are not only makers and grassroots projects, but also the new "Made by China in Ethiopia" industries. Indeed, as much as China's manufacturers are interested in delocalizing production to Ethiopia, young Ethiopians and Shenzhen-based innovators are reconsidering how to empower Ethiopians rethinking the design process, which reminds us of the Art and Crafts movement and the Frankfurt Schule mentioned earlier, to become makers, in the Chinese meaning of *chuangke*, and further upgrade the production chain in Ethiopia. Bloomberg Businessweek illustrates its cover in March 2018 with a Chinese factory based in Ethiopia revealing the actuality of the discussion (see next page).

Pattar is a bright-eyed émigré from India, with apparel experience in Bangladesh and Egypt. He keeps his pens neatly clipped in the pocket of his blue button-down oxford, and right now he's gazing out the window toward the factory floor, where scores of women are sewing seams, stamping logos, and pressing out wrinkles for Warner's underpants, a brand sold mainly at Walmart. "The government is very committed to us," he says. "They had workers here 24 hours, day and night, to build this place. And there is no corruption. None!"

Hawassa Industrial Park did go up quickly, thanks to a state-owned Chinese construction company that banged out 56



▲ Featured in *Bloomberg Businessweek*, March 5, 2018. Subscribe now. PHOTOGRAPHER: NICHOLE SOBECKI FOR BLOOMBERG BUSINESSWEEK

FIGURE 74:

Bloomberg business week article (Donahue et al. 2018)
Screenshot © author (November 2019)

Source: <https://www.bloomberg.com>

In China, the maker movement has been developed in an effort to diversify, valorize skills and expand knowledge, while in Ethiopia, it is rooted in a need of development and empowerment for youth. While China used the grassroots movement to support the reform of its system, grassroots Ethiopian makers connected to the government to gain support and deploy their ideas. The latter is challenged by the instability of the country but not less interesting or brilliant.

As Lindtner and Avle mention in a paper published in 2017, Africa and China are “sites of future making and opportunity”:

These articulations of future making in China and Africa are contingent on mounting critiques of precarious tech labor, economic instability, and the failures of modernist visions of technological progress mounted in the West. Focusing on such technopolitics, i.e. the ways in which political actions are embedded within technical forms and conversely, the ways in which the technical shapes the political, we show how tech entrepreneurship functions as vehicle for asserting political power and global reach by redefining citizenship in market terms. (Lindtner & Avle 2017: 3)

Indeed, the current situation of African countries and people, is one of transition and re-shaping. Not only Chinese and Western investors are interested to benefit and impact the economies, also the populations empower themselves through global tools shared for example through the Internet and enabled with the development of cities, connectivity and people’s strong personal engagement.

How Shenzhen is fueling Ethiopia’s burgeoning startup scene

“How Shenzhen is fueling Ethiopia’s burgeoning startup scene” is an episode of “Because China” by Quartz reportage⁵¹ covering the dynamics described in this chapter. “Because China” project is defined by Quartz followingly:

Small changes in China have huge effects worldwide; Chinese people are reshaping global tourism, education, technology, and more. But superpowers are rare, and each is different—China won’t be like the United States. We’re traveling around the world to find stories that show a Chinese superpower in action along with all of its opportunities, tensions, innovations, and dangers (Quartz 2019).

A Quartz reporter has spotted the story on Nael’s blog on medium, who then connected the people appearing in the reportage with the reporter. The fact that this reportage covers the dynamics aimed at by the “Designed in Ethiopia” project shows the power a grassroots project born in a makerspace in China can have. Not only were politics involved, but also media.

⁵¹ Quartz is a private business-focused news organization launched in New York in 2012. Its journalists are located all around the world (see qz.com).

Three extracts are shown featuring David Li at SZOIL in Shenzhen, Hruy Tsehaye at iCogLabs in Addis Ababa and Nael guiding the reporting team in the Huaqiangbei Electronic Markets in Shenzhen on the next page. The reportage was published on 17 June 2019.

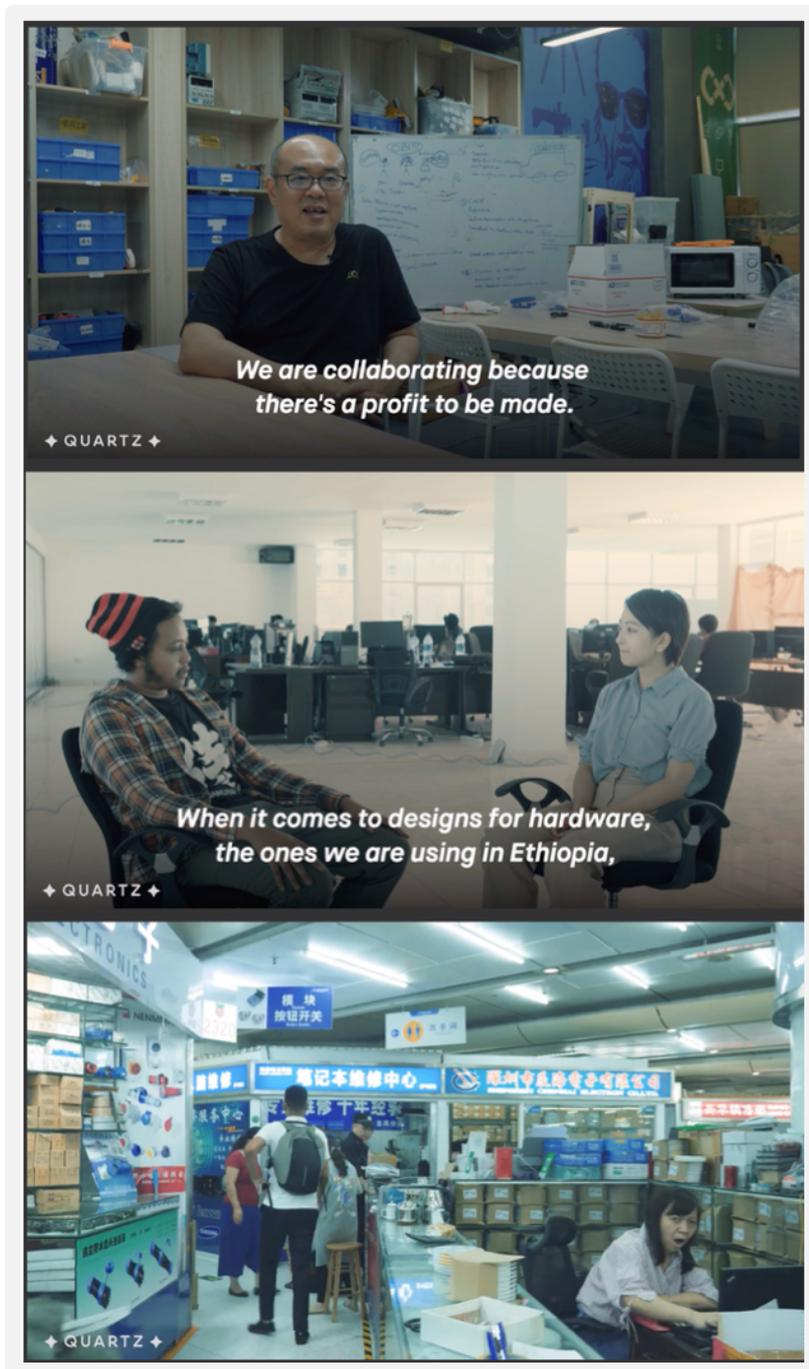


FIGURE 75:

Extracts of the Quartz reportage showing David Li (SZOIL), Hruy Tsehaye (iCogLabs) and Nael from June 2019

Screenshots © author (November 2019)

Source: qz.com/1644536/how-shenzhen-is-fueling-ethiopias-burgeoning-startup-scene-2/

KABAKOO

To illustrate further the variation in China-Africa relations with maker collaborations, the Kabakoo project will briefly be presented here. It is important to share the paths of unique individuals. The founder of Kabakoo Yanick Kemayou, has, as Nael Hailemariam, studied in China for a few years. His project is based in Mali and connects to the Chinese maker ecosystem. Here his story:

Kabakoo Academies, the pan-African network of creative schools I founded, bring together cutting-edge technologies and indigenous knowledge systems to promote the emergence of sustainable production. With our focus on manufacturing, collaborating with China-based organizations was quite natural.

But my connection to China goes back to my stays as student there. I was born and raised in Bafoussam, Cameroon, where I self-experienced the shortcomings of the inadequate education systems which many young Africans face. At 18, I left Cameroon to pursue my studies in Germany. A journey which has enabled me, thanks to multiple scholarships, to study at the Beijing Institute of Technology and at the German-Chinese Postgraduate College of Shanghai's Tongji University where I was able to study China's transformations. I obtained a PhD in Economics after doctoral studies at the University of Paderbon and HEC Paris and have taught, among others, at the Sorbonne, the University of Vienna, and the Catholic University of Central Africa. Today, I am putting all my energy and expertise at the service of Kabakoo Academies with the mission to give African youths the means to design and build sustainable futures (Interview Yanick, founder of Kabakoo Academies, December 2019).

The bottom-up project enrooted in Mali is connected to Shenzhen through partnerships with Sseed Studio / x.factory and hopefully soon with Shenzhen Open Innovation Lab (SZOIL). Yanick has been working with Sseed studio for several years even if he met Eric Pan for the first time in October 2018 in Shenzhen at the Gathering for Open Science Hardware (GOSH)^{52, 53}. As Yanick explains, the collaboration is multiple:

Currently, we collaborate with Shenzhen-based organizations such as the Chaihuo makerspace or Sseed Studio on two main ways. First, there are knowledge flows between our campuses and the Shenzhen ecosystem. This is illustrated by the fact that we have people from Shenzhen in our network of experts who interact, as mentors and distant educators, with our learners. Second, we partner with those organizations for specific projects. For example, a group of learners at our Bamako campus have developed West Africa's first citizen platform to monitor ambient air pollution with materials partly provided by Sseed. We see it as a cooperation with mutual benefits since the knowledge developed on our campuses also flows the other way back to Shenzhen; for instance, when Kabakoo learners give feedback on how the products performs in the respective local environments (Interview Yanick, founder of Kabakoo Academies, December 2019).

⁵² GOSH takes yearly place in different locations (2016: Geneva, 2017: Santiago de Chile, 2018: Shenzhen)

⁵³ GOSH 2018 Shenzhen partners were: Open Fiesta at Tsinghua University (the program of which Nael is a student), Tsinghua University, SZOIL, Sseed Studio, MakerBay and Steamhead.

Seed Studio also published news about their collaboration in 2018, with a picture from Kabakoo, they have been cooperating with tools, equipment and product support.

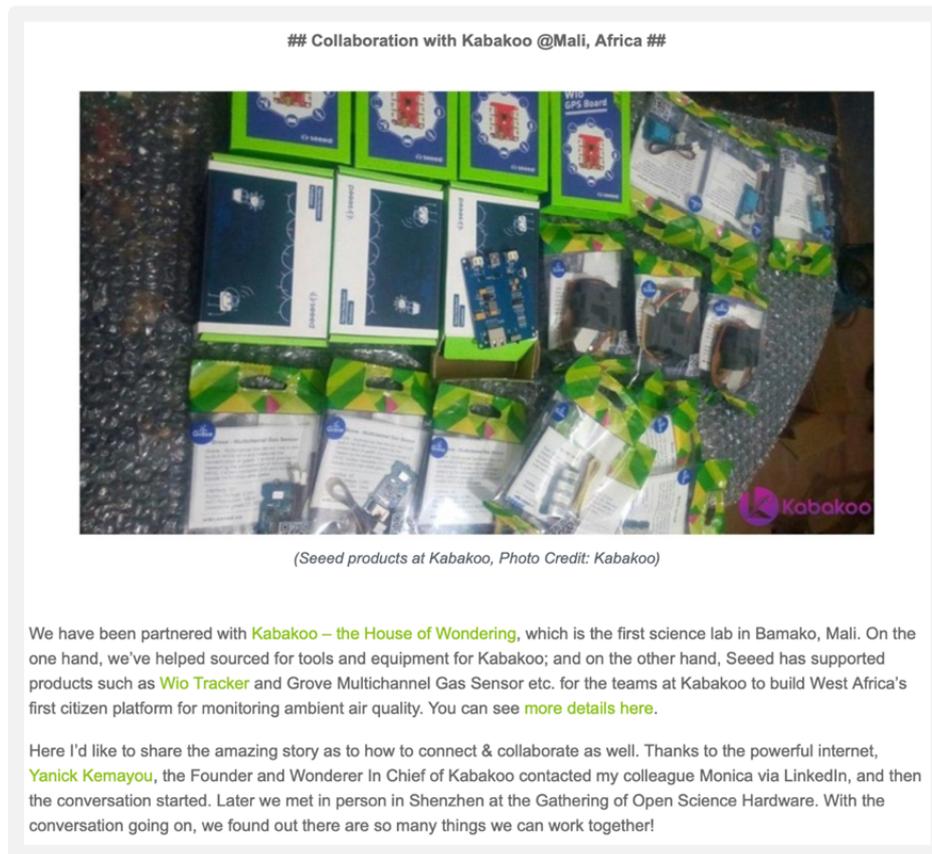


FIGURE 76:

Seed Studio blog on highlights of community collaborations in 2018, with news about Kabakoo partnership on 3 February 2019

Screenshots © author (December 2019)

Source: www.seedstudio.com

Since 2019, Kabakoo and Seedstudio / x.factory have grown in their partnership and projects . Violet Su – who has accomplished the Fab Academy in 2016 (Interview Violet, x.factory communication manager, September 2017) – has become a mentor for Kabakoo Academies in 2019. Out of 7 expert-facilitators, Violet is the only Chinese, and the second woman part of the team (Kabakoo Academies 2019). Yanick and Violet have both published in November 2019 this news on their LinkedIn accounts.

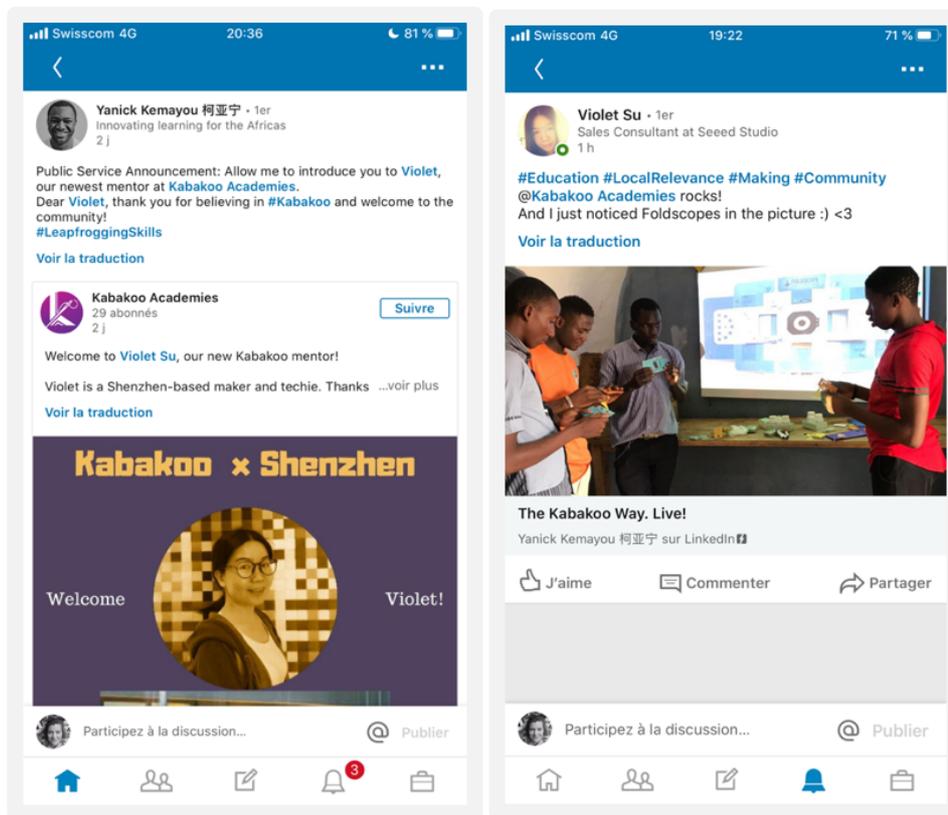


FIGURE 77:

LinkedIn accounts of Yanick Kemayou and Violet Su mentioning each other in November 2019
Screenshots © author (December 2019)

Source: LinkedIn news by Yanick and Violet, both connected to the author

It shows the intricacy and, at the same time, the globality of the maker culture. Shenzhen based Sseed Studio / Chaihuo / x.factory are partnering with makers in the world, here in Mali, aiming at an impact on people’s lives through sharing knowledge and technology.

CONCLUSION

Innovative communities, hubs, clusters, and industries are supporting and fostering exchange and open innovation worldwide, creating bridges through new types of collaborations. Indeed, projects and members’ profiles make the studied spaces in China international. Entrepreneurs, makers, student communities and groups interested in open innovation and development connect and create new ties to implement their vision. Therefore, the impact of Chinese makerspaces is not limited to China and opens the reflection further.

Experimental initiatives such as “Designed in Ethiopia” are the seeds for new dynamics between grassroots and governmental cooperation. This project, initially launched by an individual in cooperation with a makerspace in Shenzhen, has reached Ethiopian enterprises, university and governmental entities awakening interest, support, and participation. “Kabakoo” did not start in China, but Shenzhen makerspaces are partners of it and Yanick Kemayou, its founder, has studied in China, as has Nael Hailemariam, the initiator of “Designed in Ethiopia”. At the same time, as these grassroots projects are fairly rare, they are strong examples of ambitious and successful projects linking China and African countries. Both project launchers are or were students in China benefitting from educational cooperation between their countries. China has become a source of inspiration or/and a partner for empowering projects. I therefore argue that the Chinese maker “chuangke” has an imprint on global maker projects linked to local Chinese makerspaces, and represent an opportunity for ambitious and well-connected individuals.

In the case of “Designed in Ethiopia”, the local communities involved have been proactive and have attracted the attention of the Ethiopian government, which started supporting and partly co-opted this grassroots initiative. The strength and interest of this research and project lies in the potential and the efforts of individuals capable of changing dynamics. Personal paths, like that of an Ethiopian student in China, and ambitious ideas can have positive and long-term impacts through the creation of a new space for exchange, learning and self-development in a context of re-discussion of the international positioning of Ethiopia - in the world also in its relationship with China. These projects aim at, and are accessible to, motivated and proactive people offering new opportunities to grow. In addition, rethinking and learning from the shift from Made in China, as a world manufacturer, to designed and created in China, as a nation of innovation, allows us to revise the narratives and invert trends. “Designed in Ethiopia” with a “made in China” label is striving to grow towards the re-appropriation of making and self-driven manufacturing.

On another level, the Belt and Road initiative is on one hand warmly welcomed and on the other feared. As Hannah Ryder writes, the initiative’s partner countries should develop their position in order to have a balanced and conscious partnership with China. In the development of a potential win-win partnership, which constantly requires work, grassroots initiatives can flourish and persist. China’s transformation, in terms of image and narrative, is inspirational to many countries aiming at reducing poverty and improving the economic situation and quality of life. Knowledge, discourses and technologies move between China and African countries in complex ways, which are not as unidirectional, top-down and straight-forward as often assumed. According to Brokaw, a contributing editor to MIT’s Sloan Management Review, China has become the “World’s Innovation Role Model”(Brokaw 2017) and an important hub for entrepreneurs and makers. Still, as the founder of “Development Re-imagined” explains, this so-called model cannot be applied without adaptation. The Special Economic Zones (SEZ) have brought successful results in China, and need to be adapted to the requirements and context of African countries (Interview Hannah, CEO of Development Re-Imagined, August 2016). There are opportunities for positive impact thanks to the cooperation of grassroots projects in the context of wider political relationships.

结果

Jieguo

The maker culture or movement is a “fringe phenomenon” (Troxler & Maxigas 2014) of self-empowerment with an impact on personal lifepaths. In addition to their marginality, makerspaces, where makers gather to work on their projects or to meet, are liminal and ephemeral. In the Chinese urban fabric, makerspaces have expanded through grassroots communities or with governmental impulse from the 2015 initiative. The Chinese government co-opted the movement, reinterpreting the concept of *chuangke* maker into entrepreneur and creator. The maker is not only fulfilling the ideology of the urban China Dream (Taylor 2015) but also participating in the growing sharing economy (Lan et al. 2017) and the platformization of the Chinese society (de Kloet et al. 2019). The government’s enthusiasm has not been renewed, but each city has interpreted the national initiative in its own way dealing with an ephemeral and marginal culture. Shanghai, the birthplace of Chinese makerspaces, has remained hobbyist, while Shenzhen has expanded and transformed the original maker culture into a borderless platformed entrepreneurship. Beijing has been unusual in enabling alternative, fairly unseen makerspaces. The ongoing tensions in this research are linked to the contradictions and nuances in interpretations of what maker culture is, but also to the uniting of many types of spaces and activities under one umbrella. The rhizomic (Deleuze & Guattari 1987) characteristic of the maker culture is inspirational for the makers and has an effect on makerspaces (places, people and politics), urban fabric (urban integration, empowerment, ecosystems and identities) and outreach (projects without borders, partnerships and business).

In this conclusion, we will look at makerspaces, Chinese makers and co-optation dynamics, urban China and global impact through the four sets of hypotheses. We will also discuss the limits and opportunities of this research project.

MAKERSPACES IN THE CHINESE URBAN FABRIC

In this thesis, I researched the particular object of makers in the Chinese urban fabric, and some of its global entanglements on methodological and empirical levels with a multi-layered, multi-sited, and multi-disciplinary approach. My research engages with the rise of makerspaces in Chinese cities, their implications for innovation and creativity, and also the complex negotiations taking place between grassroots and governmental levels. It demonstrates how the maker concept is appropriated and adapted to the Chinese context in multifaceted ways. As China is moving towards an innovative power, especially in the realm of digital technologies, this topic under the main concepts of liminality, ephemerality, and marginality is evolving throughout the dissertation. Makerspaces, surrounding theories, and their typology is evolving in a non-linear liminal way. The thesis itself, the process of gathering information, digesting and sharing it, is liminal and explains the specific methodology developed to realize this unique process derived from Social Anthropology closer to the nature of my research object.

The four inter-related dimensions developed have structured the reflection led in the thesis: 1. The translation and typology of makerspaces in China, 2. The historicity and Chinese characteristics of the maker movement, 3. maker identities in the urban fabric, and 4. the global impact of Chinese makers.

First, turning towards innovation and technology, China recognized the potential of makerspaces that fits in a changing ecosystem and represents a possible drive towards economic success, but for a short moment only. The translation and co-optation of the maker culture in China has created multi-faceted types of makerspaces born from bottom-up and top-down dynamics. I categorized them into three non-exhaustive types: hobbyist/co-working, education and entrepreneurial/platforms. The proposed typology evolves chronologically and geographically, and keeps people at its core. Makerspaces are empowering communities and their networks (Shorthose 2004). There is a strong ideal of what a community is, where being in a group also means being able to work alone. Financial and group stability are challenging to these spaces. Indeed, the Chinese urban settings are meant for fast-speed changes and institution rites (Bourdieu 1982) with events such as open nights, Maker Faires or any other institutionalizing events require constant adaptive strategies in order to maintain interest. The concept of Fourth Place (Morisson: 2018), emerging during the knowledge economy and at the crossroads of "coliving", "comingling" and "coworking", is representative of the makerspaces studied during the intensive fieldworks. These fourth places are also empowered through the platformization of society and businesses characterizing the current Chinese development (de Kloet 2019).

The first group hypotheses discussed throughout the chapter are, for the first, infirmed as the maker culture in China did not only create two types of makerspaces (hobbyist and entrepreneurial) but a multiplicity navigating between bottom-up spirit and top-down forces. The second stating that the representation of makerspace development in China as a boom is

erroneous is confirmed. The narrative and the imaginary of the impact of makerspaces have been stronger than the observed facts.

Second, the maker culture is a way of fostering technological innovation and social change (Lindtner 2015) but also of providing an opportunity for new businesses or innovations. The concept of makerspace has been translated and reinterpreted in Mandarin Chinese, and reshaped by the Chinese socio-political environment for more entrepreneurship and efficiency. Indeed, the maker culture in China has been created with and creating a narrative generally accepted and often romanticized. I argue that Dougherty and Lindtner & Li's teleological views have served the purpose of the maker movement ideology, and have been embraced by the Chinese government, aiming at instrumentalizing citizens on the path of innovation (Wang 2016).

In general, the maker culture is enthusiastically welcomed, but also criticized. The "maker culture imaginary" (Shea & Xin 2018) has deeper historical roots and is in tension with the ideals of a resistance against mass production, the depreciation of manual work, the rise of access to consumption, which asks for a reconnection to objects. The historicity of resistance with the Arts & Crafts movement (Berrebi-Hoffman et al. 2018; Morris 2011), the re-appropriation of forms production of the Frankfurt Schule (Benjamin & Jennings 2010) or the industrial revolution of the makers (Anderson 2012) have fed the idea of a revolutionary and politicized maker movement.

Across these scholarly, political, and media accounts, "making" is positioned against passive consumer culture. I use against in the double sense of its meaning: "in opposition to" and "in juxtaposition with," the former connoting a confrontation and the latter alignment or coexistence despite (or because) of difference. In other words, making is framed as being opposed to passive consumer culture while simultaneously offering to remake it by turning end consumers into technology producers and engaged citizens who address in a hands-on manner societal concerns, perform citizen science, and intervene in the market economy (Lindtner 2015: 5).

The maker culture evolves in the tension between the ideal of resisting consumption (Benjamin & Jennings 2010), and profiting from the access to consumption (Miller 1995), both empowering in its context. In China, makerspaces can have individual forms of resistance but do not represent a wider idea of revolution, since the co-optation dynamic of the Chinese state has englobed the culture. It is a culture with several movements, varying its geographical locations and members who do not define themselves as makers as noticed throughout the interviews. Those calling themselves "chuangke" are usually entrepreneurs. Politics and policies shape the framework and sometimes the physical places, but not so much the spaces created by the people. I argue that these spaces have no value without citizens, users and communities, and therefore without a community, spaces only created for governmental initiatives have disappeared.

The second group of hypotheses discussed in the chapter are confirmed. First, despite ephemerality and marginality, the maker movement is creating new ways of working in China. It also represents a niche of opportunities, and has a liminal function for its participants who

develop and grow in their projects, change their lifepaths and learn. Second, the Chinese government instrumentalized the maker movement in order to boost the economy. As mentioned by an informant during an interview, the Chinese government is smart and takes pragmatic decisions. The third hypothesis: "A new elite emerged from the co-optation of the makerspaces in China" is discussable. I argue that it is right and wrong. On one side, the Chinese government intends to support a new economic elite; on the other side, the ideals and nature of the global maker culture contradict the co-optation acceptance. I believe that the bottom-up and top-down dynamics create complex ties and unique spaces that negotiated their position individually.

Third, Mega-cities enhance the existence and creation of multiple types of spaces that create networks linked to places, spaces, objects, and people. The strategic support of creative classes (Florida 2004) through creative and cultural clusters (Keane 2011) follows a Chinese clustering tradition to speed up the economy with, for example, the Special Economic Zone (SEZ), of which Shenzhen was a pilot (Bräutigam & Xiaoyang 2011; World Investment Report 2019). The cultural cluster tool allows the gathering of cultural goods and products, the conservation of a cultural specificity that represents the nation (Fung & Erni 2013) and promotes new businesses, proto-businesses and learning spaces, with the aim of attracting more investment (O'Connor & Gu 2006) but creating an exclusive and excluding urban elite (Peck 2005; Kohn 2013). Creativity is an indicator of the competitiveness amongst Chinese cities applying national initiatives to become a country of innovation with new models of consumption (Central Committee of the Communist Party of China 2016). Shanghai, Shenzhen and Beijing are therefore part of the UNESCO list of cities of Design, while Shenzhen is also a Fab city since the Fab12 meeting in Shenzhen in 2016 (National People's Congress of China 2013; Pang 2012).

In China, the maker culture inspired the government to adapt it to its "Dream" ecosystem and needs. Urban development and its challenges are a political priority and partly expressed in the innovation policies. The co-optation of the culture did not lead to a unilateral discourse with a purely top-down approach. It would undermine the power of decision and personal paths of individuals in China, and the maker agency. As mentioned earlier, I believe that the Chinese maker discourse actually reflects mixed interventions from the state, the private sector and the maker communities. The boundaries between the actions and activities are unclear, since communities may profit from state intentions while the government may profit from community actions. While for some, the maker culture started with the governmental initiative supporting makerspaces, for others, it has been transforming and partly leading the original culture to extinction (Xue 2018). The risk of institutionalizing ephemeral structures of change prevents their inherent evolution and opportunities for failure, and forces ambition. The grassroots identity of makers is in parallel, and possibly contradicts, the one promoted by mass entrepreneurship. The story of maker communities in China highlights how tools, technologies and values are sites of appropriation, negotiation, and remaking, translated into a unique setting. In a constant tension of redefinition, the spaces are exploratory and innovative with a mix of top-down and bottom-up dynamics. Paradoxically, at the same time as rethinking the workspace, hierarchies, modes of consumption and autonomy,

makerspaces blend into the system, acting as a niche between companies and individuals. They carry a double identity of change-maker and of new entrepreneurs (Wang 2016), inscribed in a tradition of policy experimentation (Heilmann 2008b; Schoon 2014). Co-optation has changed the audience and partly the content of the makerspaces.

The maker culture expressed and instrumentalized through different events and approaches gives the opportunity for new business to flourish and for a rejuvenation of the cities' narratives. Makerspaces are not only liminal for their people, but also for the cities wombing them.

The third group of hypotheses discusses the role of the city and to its individuality reacting to the national initiatives. Indeed, each city develops local strategies and interprets top-down initiatives. Unique urban identities emerge as a result illustrated by the leading maker typology of each city: Shanghai as hobbyist, Shenzhen as entrepreneurial, and Beijing with unusual alternatives. The second hypothesis: "Makerspaces are part of planned creative clusters belonging to the Chinese urban fabric" is to be infirmed based on my fieldwork. Makerspaces are not specifically part of creative clusters which reflects the interaction with and agency of makers in these top-down and bottom-up dynamics.

Fourth, the Chinese makerspaces' matrices started in Shanghai and expanded to Shenzhen, and to the whole country. Nevertheless, makerspaces in China are not limited to the country. The Chinese maker culture, coming from the West and transformed to become more entrepreneurial and profiting from the Shenzhen ecosystem, has brought changes by connecting, empowering and exchanging with communities worldwide. The Chinese *chuangke* maker is more applicable to the current African needs for spreading of local knowledge, innovations, and empowerment. The transitive aspects of makerspaces are an opportunity for renewal and for recalibration of the development of experimental education and entrepreneurial projects. The grassroots projects are inverting the expectations of China-Africa relations that are widely analyzed by scholars (Brautigam 2009; French 2015; Ching Kwan Lee 2018) providing an inspirational image and an imaginary of Chinese cities, development model (Brokaw 2017) and partnerships (Quartz 2019; Ryder 2018; Tsegaye 2017). I highlight that the complex dynamics between China and African countries are not unidirectional and uniquely top-down as often assumed. The ambiguity of these relationships is fed by empirical data of projects in the field. With this chapter, I show an experimental action anthropology process combined to my ephemeral, marginal and liminal object of research, with the aim of engaging with and contributing to the communities in an academic framework.

The "Designed in Ethiopia" project is an example of bottom-up and top-down intricacies and the aim to learn how to leverage resources, expertise, production, and logistics of Shenzhen to develop their own products. It is also the first program to demonstrate how Mass entrepreneurship can work with the Belt and Road initiative and how this initiative can be inverted. Kabakoo, the second project, is now partnering with several organizations in Shenzhen,

the aim to learn from Shenzhen is shared with the Ethiopian project even if the organization is already stably built in Mali. The empowerment and connections of this work is opening up the research.

The fourth group hypotheses discussed throughout the chapter are confirmed. They have been developed during the fieldwork and therefore more accurate since the beginning. The chapter shows that projects and members' profiles make the studied spaces international. The impact of Chinese makerspaces is not limited to China. The Chinese maker "chuangke" has an imprint on global maker projects linked to local Chinese makerspaces.

Finally, this thesis fills the knowledge lacuna in the topic and offers an alternative narrative to the one romanticized and embraced by the Chinese government in 2015, while recognizing the opportunities the maker culture offers to people, cities, and systems. Under the umbrella of liminality, ephemerality and marginality, the makerspaces are fourth places of making and of empowerment, be it through resistance, integration, or access to consumption modes.

I highlighted the global and local belonging and specificities of the maker culture, its urban integration in China, and examples of projects' paths enhanced by the access to the Internet, the platformization incentives, and public and private initiatives.

During this project on makerspaces, I had an opportunity to conduct intensive fieldwork, meet and discuss with many fascinating people. People are at the heart of this research. In addition, I could test and develop a specific methodological approach to study places of change and in constant transition integrating practical and discursive levels.

LIMITS AND OPPORTUNITES OF RESEARCH

The fieldwork has revealed the challenge of working on western concepts reinterpreted in China, and at the same time given the opportunity to go one step further and see how this concept could be further adapted. In this research, having personal projects has been the way to interact and learn from makers in China, which was essential to propose an alternative to and nuanced reflection on the positive and partially co-opted narrative constructed and shared by Lindtner and Li (Lindtner 2014, 2015; Lindtner & Li 2012). This narrative was largely recovered by the Chinese government to brand its innovation politics, and promote the shift from a Made in China to a Make and Created in China industry (Keane 2006). The ideas of the maker culture were co-opted into the national 2015 mass entrepreneurship initiative, which made cities support individually the maker narrative, makerspaces or makers, but didn't restrain the original makerspaces to continue expanding. The comparative perspectives between the cities has shed light on these differences.

Shanghai has allowed makerspaces to exist in China through a matrice of original spaces, while Shenzhen is the only city which narrative was strongly influenced by the maker culture, by hosting branded Maker Faires every year since 2012 with Chaihuo / x.factory, having Li Keqiang visiting Chaihuo in 2015, opening the Shenzhen Open Innovation Lab (SZOIL) in 2015 with D. Li as a co-founder, hosting Fab12 in 2016 and joining the Fab Cities network. Beijing has remained more discrete with the narrative of the makerspaces by co-opting spaces and events, and has enabled marginal alternatives to find a place to exist – even if in the process they are challenged.

The limits of the research are evident in the enormous variety of spaces and places, which had to be selected in order to deepen the experience, the knowledge and the network. The need for constant reflexivity and the transductive approach (Schmid 2018) of constructing and deconstructing the narratives, and the variation of fieldwork (exploratory, deepening, expanding in multidisciplinary and geographical terms, and consolidating), workshops and conferences, took place in the context of China. China is here singular in its adoption and adaptation of the global maker movement in its ecosystem and agenda, and at the same time universal by completing and re-translating the culture, spreading it through its own grassroots and co-opted communities.

The multi-layered, multi-sited (Hine 2007; Marcus 2016) and multi-disciplinary (Bolli et al. 2020; Ramadier 2004) research, allowed us to explore experimental methodologies in a fast-changing environment, surpass the geographical framework given by the initial project and expand the reflection without losing the voice of the *makers in China*. Different types, qualities and temporalities of things and people are part of the making of anthropological knowledge (Pink & Morgan 2013). Connecting the dots and people was part of an active anthropological approach.

Being an anthropologist in a Polytechnic School of engineers is an opportunity and a challenge. Makerspaces and their study create a bridge between social sciences, urban studies, and innovation and technology. As a non-maker, joining maker communities was a challenge but has resulted in an enriching liminal path of active anthropology in which connecting the dots and the people was part of the results and restitution. It is essential for the world of engineers and technology to be connected to the people, their lives and paths in order to have an impact. Working in and on such a complex country as China adds to the enrichment and teaches us about its local and global positioning. Fieldwork in makerspaces, and more widely, in China, is important to deepen the knowledge on the country by surpassing stereotypes as objective and critical as possible. It was essential to situate the makerspaces in the Chinese urban fabric in the historical, political and cultural context of China acquired before and along the research path.

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List of images

FIGURES

Figure number, title and year – more details are given with the figure on the indicated page

FIGURE 1: Building the dream – China’s hukou statistics (2014)	26
FIGURE 2: Phases of Chinese rural-urban migration (2015)	27
FIGURE 3: China’s social stratification and hukou type (2019)	28
FIGURE 4: China’s Makerspace Boom Abates (2018)	42
FIGURE 5: Hackerspaces in the world & active hackerspaces in China (2019)	45
FIGURE 6: Fab Labs in the world & Maps of certified Fab Labs in China (2019)	48
FIGURE 7: Fab Lab 0 posts on WeChat on 5 June and 17 May 2019 (2019)	49
FIGURE 8: XinCheJian and Mushroom Cloud on WeChat on 13 February 2019 (2019)	56
FIGURE 9: Active groups & example of conversations on WeChat in June 2019 (2019)	57
FIGURE 10: WeChat groups of q-space and XinFab in February (2019)	59
FIGURE 11: Facebook p. of Chaihuo x.factory in June 2019, and Q-space in August 2017	60
FIGURE 12: Shenzhen Open Innovation Lab (SZOIL) and Mushroom Cloud websites (2019)	61
FIGURE 13: Places before and in the knowledge economy (2018/2019)	65
FIGURE 14: Typology and makerspaces – a proposal by the author (2019)	66
FIGURE 15: News of XinFab's reopening (2018), closing (2019) and re-opening (2019)	74
FIGURE 16: XinFab News on 18 November 2019 (2019)	75
FIGURE 17: Shenzhen map with maker hubs by Lab 0 (2017-2018)	82
FIGURE 18: Litchee lab plan on Litchee’s website (2019)	95
FIGURE 19: Book cover “3D 打印机如何动手做” - “How to make 3D-printers?” and p.13 as illustrative example (2019)	96
FIGURE 20: Map of x.factory (2018)	102
FIGURE 21: Belt and Road and Maker Forum advertisement (2017, 2018)	103-4
FIGURE 22: Q-space publication on reasons for closing, on 10 November 2018 (2018)	109

FIGURE 23: Q-space publications on events, on 4 December 2018 and 8 September 2019 (2019)	110
FIGURE 24: Spatial representation of the city by Ramadier (2004/2019)	118
FIGURE 25: Visual on research timeline and path of the author (2019)	119
FIGURE 26: Visual on research timeline and path of the author (2019)	120
FIGURE 27: Zine extract from the project “Mapping makerspaces” (2018)	130
FIGURE 28: Co-disciplinarity by Ramadier (2004/2019)	131
FIGURE 29: Zine extracts - drawings by Anaïs Bloch (2018)	134
FIGURE 30: List of people of reference, informants for the research (part 1) (2019)	137
FIGURE 31: List of people of reference, informants for the research (part 2) (2019)	138
FIGURE 32: Global maker culture timeline (1990-2000) (2019)	149
FIGURE 33: Chinese maker culture timeline (2008-2018) (2019)	151
FIGURE 34: Stylised Model of China's Governance System (2009/2019)	158
FIGURE 35: Extracts of the video “a song about China’s 13th 5-year-plan”, October 2015 (2019)	160
FIGURE 36: Premier Li Keqiang visits Chaihuo makerspace in Shenzhen on 5 January 2015 (2019)	161
FIGURE 37: Major Makerspaces in China in 2015 (2016)	162
FIGURE 38: Wen Wen’s pyramids of makers (2017/2019)	164
FIGURE 39: China’s GDP 1960-2014 (2017)	166
FIGURE 40: Premier Li Keqiang urges greater push for innovation, 17 June 2015 (2019)	169
FIGURE 41: Chinese entrepreneurial innovation thanks to the development of the Internet (2015)	173
FIGURE 42: Shanzhai phones by Shanzhai archaeology (2019)	176
FIGURE 43: Made in China / Shanzhai (2012)	176
FIGURE 44: Screenshots of China Van Gogh’s documentary (2019)	179
FIGURE 45: Comparative table of membership fees of four makerspaces in China and median monthly income in Shanghai, Shenzhen and Beijing according to Forbes (2017) (2019)	181

FIGURE 46: 未来十年是创客的天下 – The next decade is the world of the chuangke entrepreneurs (2015)	185
FIGURE 47: 乘风而起 – Ride the wind (2016)	186
FIGURE 48: 让创新驱动引领产业转型升级 – Let innovation lead the industrial transformation and upgrading (2017)	186
FIGURE 49: Chinese recipe film poster (2016)	189
FIGURE 50: National People’s Congress of China cover (2013)	199
FIGURE 51: Types of spaces of collective innovation by type of governance and innovative approach (2017/2019)	199
FIGURE 52: The anatomy of the creative city (2010)	203
FIGURE 53: Timeline of events and trajectories of third-spaces (Shanghai 2010-2015)	204
FIGURE 54: Hierarchy of territorial administration in mainland China (2006)	206
FIGURE 55: The Five Levels of Government in China and the Size of the Population Governed at Each Level (2017)	207
FIGURE 56: China’s super-region clusters (2018)	209
FIGURE 57: Map of Chinese urban clusters (Chengshi qun 城市群 – cluster)	210
FIGURE 58: Shanghai’s creative industrial parks in central city before the 5th batch and their distribution with M50 and 1933 highlighted, as well as Jing’An District encircled in red (2013 / 2019)	212
FIGURE 59: Shenzhen, Nanshan District creative clusters (2017)	213
FIGURE 60: Beijing Creative Clusters (2009)	216
FIGURE 61: Shanghai Map for Makers (2016)	221
FIGURE 62: Shenzhen Map for Makers (2015)	226
FIGURE 63: Shenzhen by WIRED reportage (2016)	227
FIGURE 64: Shenzhen by Bloomberg reportage (2019)	228
FIGURE 65: Call for Makers / Maker Carnival Shanghai advertisement (2019)	239
FIGURE 66: Inter-relating makerspaces levels by Smith, completed by author (2019)	249
FIGURE 67: Inter-relating networks and pivot people (2019)	251
FIGURE 68: The Belt and Road initiative creates a global infrastructure network (2018)	257
FIGURE 69: Belt and Road summits and maker cooperation (2017)	260

FIGURE 70: Belt and Road summits and maker cooperation (2018)	262
FIGURE 71: Timeline of the "Designed in Ethiopia" project with the activities of the author (2019)	264
FIGURE 72: "Designed in Ethiopia" call for teams by the Ethiopian government (2018)	265
FIGURE 73: iCogLabs and Ministry's "Designed in Ethiopia" Facebook pages on the event (2018)	266
FIGURE 74: Bloomberg business week article (2018)	267
FIGURE 75: Extracts of the Quartz reportage showing David Li (SZOIL), Hruy Tsehaye (iCogLabs) and Nael from June 2019	267
FIGURE 76: Seeed Studio blog on highlights of community collaborations in 2018, with news about Kabakoo partnership on 3 February 2019 (2018/2019)	271
FIGURE 77: LinkedIn accounts of Yanick Kemayou and Violet Su mentioning each other in November 2019 (2019)	272

MAPS

The maps are made of baidu maps' screenshots and added information by the author

MAP 1: Selection of places of interest in China (Beijing, Shanghai and Shenzhen) (2019)	31
MAPS 2: Makerspaces of interest in Shanghai, Shenzhen and Beijing (2019)	67
MAPS 3: Shanghai and different locations of XinCheJian from 2011 to 2019 (2019)	72
MAPS 4: Shanghai and different locations of XinFab from 2014 to 2019 (2019)	76
MAPS 5: Shanghai and Mushroom Cloud's location in Shanghai from its creation in 2013 to 2019 (2019)	80
MAPS 6: Shanghai and Fab Lab 0 Shanghai's location in Shanghai from 2013-2019 (2019)	86
MAPS 7: Shanghai and Shanghai Library's location in Shanghai (2019)	89
MAPS 8: Beijing and Atelier Fab Lab's location in Beijing (2019)	92
MAPS 9: x.factory's location in Shenzhen (2019)	100
MAPS 10: Shenzhen and SZOIL's location in Shenzhen (2019)	105
MAP 11: Makerspaces in Shanghai (2019)	219
MAP 12: Makerspaces in Shenzhen (2019)	224
MAP 13: Makerspaces in Beijing (2019)	229

PICTURES BY THE AUTHOR

PIC 1: Innovation Zone – x.factory Shenzhen (September 2017)	36
PIC 2: Visual communication at XinCheJian, Shanghai (2017-2019)	62
PIC 3: XinCheJian activities in Shanghai: 3D printing workshop (September 2017), party (November 2017), precious plastic workshop (April 2019)	63
PIC 4: Panoramic picture of XinCheJian, Shanghai (2019)	69
PIC 5: XinCheJian, Shanghai (2017-2019)	73
PIC 6: XinFab, Shanghai (October 2017, March 2018)	77
PIC 7: Mushroom Cloud's product distributor (February 2018)	79
PIC 8: Mushroom Cloud, Shanghai (September 2017, February 2018)	81
PIC 9: Litchee Lab projects, Shenzhen (March 2019)	84
PIC 10: Fab Lab 0 Tongji, Shanghai (March 2018)	87
PIC 11: Chuang.xin kong jian at Shanghai Library, Shanghai (September 2017)	90
PIC 12: Atelier Fab Lab Beijing (September, November 2017)	93
PIC 13: Litchee Lab, Shenzhen (March 2019)	95
PIC 14: The members of x.factory, Shenzhen (September 2017)	99
PIC 15: x.factory, Shenzhen (November 2017, March 2018)	101
PIC 16: SZOIL, Shenzhen (November 2017, March 2018)	106
PIC 17: Coderbunker, Shanghai (March 2018)	107
PIC 18: Q-space, Beijing (September 2017)	108
PIC 19: Research tools: phone (March 2019)	113
PIC 20: Research tools: notebook (March 2019)	114
PIC 21: Research tools: notebooks of the research (October 2019)	115
PIC 22: Research tools: notebook extract (October 2019)	115
PIC 23: Research tools: a camera (March 2019)	116
PIC 24: Presenting the research at XinCheJian open night, Shanghai (September 2017)	122
PIC 25: Participative observation at XinCheJian, Shanghai (October 2017)	123
PIC 26: 3D-printing workshop at XinCheJian, Shanghai (September 2017)	123

PIC 27: First self-made silk-screen printed object inspiring the rest of the experimentation, Beijing (October 2017)	124
PIC 28: Parts of the manual silk screen printing process, Shanghai (October and November 2017)	125
PIC 29: Private silk screen printing workshop, Shanghai (December 2017)	126
PIC 30: Addis Ababa, Ethiopia (January 2018)	127
PIC 31: Florence, Anaïs, Emanuele and Clément, Shenzhen (March 2018)	127
PIC 32: Meeting with Lit Liao from Litchee Lab, Shenzhen and meeting with Nael and Kenna at Tsinghua University, Shenzhen (March 2019)	128
PIC 33: Presenting at Urban creativity conference Lund, Sweden (May 2019)	129
PIC 34: Workshop in Renens (May 2017) and in Shanghai (March 2018)	132
PIC 35: Workshop in Shenzhen (March 2018)	133
PIC 36: Group production of zines from the public workshop in Shenzhen – each participant took one home (March 2018)	135
PIC 37: Shanzhai phones at exhibition of Shanzhai Archeology, Geneva (May 2017)	176
PIC 38: Dafen, Shenzhen (March 2018)	178
PIC 39: Squiggle post-it – drawing of a maker to explain his project to the author (September 2017)	190
PIC 40: Precious Plastic projects at XinCheJian, Shanghai (October 2017, March 2018, May 2019)	191
PIC 41: Diverse projects: Helicopter simulator (XinCheJian), urban farming with turkeys (nearby Shanghai), art coding (x.factory), hacked music instruments (Innomaker+), kids's tutorials (Fab Lab Atelier Beijing), Map PCB (Fab Lab 0), Shanghai, Shenzhen and Beijing (September-December 2017, March 2018, March-April 2019)	192
PIC 42: OCT-Loft Shenzhen, Southern part (left), Northern part (right) (August 2019)	212
PIC 43: Shanghai's contrasts: city (2016-2019)	233
PIC 44: Shanghai's contrasts: people (2016-2019)	234
PIC 45: Shenzhen's contrasts: city (2016-2019)	235
PIC 46: Shenzhen's contrasts: people (2016-2019)	236
PIC 47: Beijing's contrasts: city (2014-2019)	237
PIC 48: Beijing's contrasts: people (2014-2019)	238
PIC 49: Shanghai Maker Faire, Knowledge and Innovation Community, Shanghai (October 2017)	240

PIC 50: Shenzhen Maker Faire Conference and poster (November 2017)	241
PIC 51: Shenzhen Maker Faire (November 2017)	242
PIC 52: Beijing Maker Carnival, 798 Art District, Beijing (March 2014)	243
PIC 53: Beijing Maker Faire at China Millennium Monument, Beijing (August 2016)	244

Annexes

INTERVIEW FISHBONES

Template for interviews (Fall 2017)

Persona

Age / born in / living in / nationality / job

What are you doing in life?

Why this city / future?

Why this place for our meeting?

You and the space

1. Which space do you go to?
2. What is your role in the makerspace?
3. What does it bring to you? (Positive) Impact?

The space's changes

1. Most important events for you since you are part of / in the space?
2. How do you perceive the makerspace's evolution? Change? (geo, ideology)
3. What are and have been the most important people for your space? (links, roles)
4. Did the types of participants change over time?

Project

1. What is your most important or favorite project you did in this space?
2. Who was involved?
3. How was it funded?
4. What did you learn? What was your biggest failure?
5. Could you have done this project in another space?

Maker movement

1. How do you link *chuangke* and maker? is the translation « usable »?
2. What are you the most important people in the maker movement here? in China? in general?

Communities

1. What type of communities participate in the makerspace?
2. What is the gender ratio? are there many women in the community?
3. Would you consider it a community? What does it mean to you?
4. Do you have any key female makers to recommend contacting for an interview?

Space and the city

1. Do you think this space could exist like that in another city?
2. What / where are the sister / friend organizations to your space in the city?
3. Which is the best area for makerspaces?

Fonctionnement

1. Did you get support from the government/ companies / policies?
2. What's the business model? sustainability?

Recommendations+ Data

1. Which makerspace would you recommend and why?
2. What data could we use for a cartography (ies) of spaces?
3. Is there any existing research data, viz, maps already been done in your space?

Interview extract Amanda – notes

Amanda MA, Innomaker, innospace+, Yangpu

Shanghai, innospace café, 19.09.17

Interview

19.09.17, 10:00-11:00, café space, innospace+
Amanda, Chinese from Qingdao, 30-40 yrs old, founder of Innomaker+ and former XCJ space manager
Language: English

Meeting in the hall, we get a coffee and sit down at a table. After the meeting, Amanda shows me Innomaker+. (Contact given by Paul – also former XinCheJian member)

M: Where are you from?

A: Qingdao etc.

M: How did you get to Shanghai?

A: I came to Shanghai for my master's degree, I went to Shanghai normal university, not that I'm abnormal (laughing) but the school was called liked that. It used to be a university or college to train teachers so I guess it's why they called it, as norm- standard, normal university but it always sounds strange to me.

M: what was your major? Teaching?

A: linguistics

M: so that's why your English is so good!

A: Thank you, thank you but you now, people who study linguistics mostly study grammar, syntax etc. and I was studying corpus linguistics. You know the word corpus, right?

M: I think so

A: so basically, it's like very beginning of language processing, a database of different raw material of language or articles and you use a software to analyze it. When I was studying that, I was trying to normalize or standardize like grammar, like the cutline of what people should or should not say when they speak or when they write. So, when I was studying linguistics there, I was thinking, wow, learning language, English, is a big problem for many Chinese people – a computer or software could make things easier, help ppl understand grammar things and that's why I chose corpus linguistics.

M: That's fascinating – so how did you move from corpus linguistics to XCJ to Innospace?

A: that's a long story and a short story. To keep it short, I am personally very interested in computer and technology, hardware stuff, I fix my own laptop since high school and things like this. I'm a little bit geeky, so I am always into technology stuff. But I studied languages and my foreign language was German. After graduation I moved to Germany for some time, first of all, my boyfriend was German and lived there and I also wanted to see if there was anything, I could be doing myself in Germany. So, I went over there for some time but it turned out that Germany wasn't something for

me, for people like me. I'm very active, I like life in Shanghai, I like networking and talking to ppl, having dinner, having fun, inviting friends over to my home and you know just talk and things like that wouldn't be very easy in Germany. You drive to work in the morning, you drive back home in the evening. You might have dinner with friends on Friday evening but most of the time you will stay home. You can do shopping on weekends and meet friends and drive hundreds of miles to meet a friend, so not a very friendly environment for ppl like me. I missed Shanghai too so I decided to come back. I started my own business as a consultant because during my studies and also my time in Germany – I met many people in small companies. They were very curious in China, and would like to make business with China if they would have the opportunity. So I was talking to them to establish contact and bc my background was language, I was talking to some law firms to do orientation trainings for foreign employees coming to Shanghai. But I got bored of it quickly because it's an easy job, not very exciting. After 3 years, I thought I might need to take a break and just relax, see what I want to do next. I hang out with some friends and they told me there was this cool place you have to go, there was this hackathon happening at XCJ and this friend told me it's super cool with a bunch of geeky ppl working on electronic stuff and things I don't understand. So, I thought ok I can go. So, I went, it was the first hackathon in my life, when I saw what people were doing. It was so much fun. During the whole process, people learn how to do and make something It is interesting and exciting. It feels like something I really would like to do, it's fun! So, I joined XCJ as a member. But I'm also a bit impulsive and hate when things are lying around or messy it drives me crazy. But after a couple of days, I was working on my own project, there were always people leaving things on the table, things were laying around, I don't know where to find it. So, I started having things sorted out. That was 2013. Paul and David, the co-founders of XinCheJian were still there and they were very happy someone was helping out. They had full-time jobs and they were not able to be at XCJ to be all the time so they asked me if I wanted to be a staff member, help us to run the space. Of course, it was all voluntary, there was no payment. I thought why not, I might spend a lot of time here. So, I started helping, recruiting new members, organizing new events and activities. That's how I got involved.

M: You were also in charge of building up the community, how did you do that?

A: I think for many ppl, they think building up a community is very easy, you just do things and other people will come to you. In 2013 and 14, because that was very new, but also you need to let the word out, you need to let the people outside know that you are doing this kind of activities It's also very educational and inspiring as well. More people should be involved. I don't know, it's maybe also because of my personality, I like to talk to people and I get to be friends with them very quickly. Many of the ppl became members, they spent some time there, learning stuff or even help me out. That's how It got bigger and bigger.

I think in 2014 – of course XCJ became more active and well-known – also recognized by the community – in 2014, the government gave a strong push to the maker movement, the central government. Everybody, the whole society was curious about what is a maker? The government, the civilians, everybody, also schools, universities and all the kind of companies, organizations – it was like maker was a newly created word, I never heard, so curious. Then they organized these tours to visit XCJ. When people search makerspace or hackerspace on the website, it's usually XCJ or Chaihuo because we were the most active. I also think that XCJ is the least commercial and that's why people like it, there is no conflict of interest inside. Some other makerspaces came up later, or were setup in response to the government's call, they were setup with a very strong purpose, they were organized / run differently. I have a very strong... I'm emotionally attached to XCJ, in my mind XCJ is the one place in China if you want to do something without this intention of making a lot of money out of it.

M: So, you think there is no other space of the same type in China?

A: yes

M: as you are a linguist... (Laughing together), for me it's very difficult to define the word community, how would you define it?

A: Community can be physical, can also be an online community, a group of people that are connected with the same aim or purpose or share the same interest as long as they share something, they form a community naturally, like language. There are English learning groups, makers' groups etc. This whole industrial program, no it's not, this whole area is called knowledge and innovation center. It's also called knowledge and innovation community. The developer of this area / park – they wanted to be as a community, it is not only offices, offices, offices, they wanted to have the living environment, the commercial street, the office spaces, some entertainment and also space for kids. This whole park is a natural community. You might just stay within this community and you will have everything you need.

M: is this your life, do you live here?

A: No, I don't live here, I live a little bit in downtown, it's too expensive for me here now. It's really full.

M: What do you do here? What is this place Innomaker?

A: I work in this building, this building is innospace+, we also call ourselves e-community for startups, not just for makers. When I was at XCJ, I was very happy that ppl without interest in money or anything would come to XCJ and build their own stuff or learn. I was very happy to see that but around that time 13-14 when the government was pushing the maker movement, the country. Ppl and other startups were coming to XCJ seeking for help for financing, recruiting team members, but as XCJ is non-profit and doesn't really encourage entrepreneurship, it encourages innovation, it encouraged ppl to come to the space, use the facilities, the equipment and the knowledge of the community to try new things and find ppl to help. But to start a new business it's a different story, ppl to help you build your business etc.

WeChat Interviews (Fall 2017)

1. YOU - Who are you? What is your story with this maker/hackerspace and this city? What kind of projects are you working on and what is your aim? (You can stay anonymous if you want, but I am thankful if you can share a bit of your path)

1. 关于你-你是谁? 你和这个创客空间以及这座城市有怎样的故事? 你正在进行什么项目以及你期望达成什么目标? (你可以选择匿名作答, 但如果你能分享一些你的经历, 我会非常感谢)

2. MAKERSPACES - What spaces are you going to / are you part of? What are your links / connections / and role(s)?

2. 创客空间-你要去哪个创客空间或者已经是哪个创客空间的一部分了? 你的与该空间的联系以及角色是什么?

3. CHANGES - did you notice any changes in your space or in the general ecosystem since you are part of the community? If yes, what? Which evolutions did you notice?

3. 改变-你是否注意到了你所在的空间发生了任何变化? 或者自从你加入后, 社区的整个生态圈有任何变化?

4. CHALLENGES - what are the challenges of your space? Of the ecosystem? etc.

4. 挑战 - 你所在空间以及生态圈等所面临的挑战是什么?

5. ECOSYSTEM - how is the ecosystem here special to you? What can we learn from it? Could we export some ideas abroad? Why is this ecosystem possible here?

5.生态圈：这里的生态圈对你来说有何特别之处？我们可以从那里学到什么？有什么经验可以传输到国外吗？为什么这个生态圈在这里是可能的？

WeChat Interview answer example

**Andrea GUALLAR – maker, entrepreneur, freelance
Shanghai, XinCheJian, 25.1.19**

1. YOU - Who are you? What is your story with this maker/hackerspace and this city? What kind of projects are you working on and what is your aim? (You can stay anonymous if you want, but I am thankful if you can share a bit of your path)

I am Andrea Guallar Panés, engineer in industrial design from Barcelona. I arrived 2 and a half years ago to Shanghai to establish a OR office for a car components manufacturer. My husband was spending most of his time in the first hacker space of China while he was trying to find a job opportunity. Then the community was very engaging and I met my current business partner Adele. Together, with some more people, started to build the Precious Plastic machines to recycle plastic locally in a small scale. One year after decided to set up our own company called Melting Point to answer the sustainability market needs for business as well as create curriculum for educational centres.

2. MAKERSPACES - What spaces are you going to / are you part of? What are your links / connections / and role(s)?

I am member of XinCheJian, first hacker space of China based in Shanghai. I am a regular member.

3. CHANGES - did you notice any changes in your space or in the general ecosystem since you are part of the community? If yes, what? Which evolutions did you notice?

The community hasn't changed but the more implication I have, the more I realize the financial struggle for our maker space.

The space has shrunk because we cannot afford paying the rent.

4. CHALLENGES - what are the challenges of your space? Of the ecosystem? etc.

Challenges are to be able to have a nonprofit business with enough financial capacity to pay the expenses of rental, space manager and bills. Besides, the everlasting challenge is to maintain a community engaged and compromised with interesting projects.

5. ECOSYSTEM - how is the ecosystem here special to you? What can we learn from it? Could we export some ideas abroad? Why is this ecosystem possible here?

The ecosystem in Shanghai is quite unique among makerspaces due to the wide range of aged and nationalities being part of it. Besides, for some reason, XinCheJian is like a social club as well that does not ban members making money with your project. and strongly encourages people making profitable projects (despite other reivindicative philosophy ID that other makerspaces are based on which do not allow members to make business in it) also, i think the lack of pressure for members releases an appropriate atmosphere for creativity. It does not matter if you are not an engineer, artists, crafters.... All are welcome!

6. FUTURE - what will be the next steps for you?

I will make my project turn into a social enterprise, focusing either in B2B as well as keep on helping XinCheJian hosting workshops to attract new members and settle a recycling permanent consciousness in our space

REFERENCE LIST OF INNOVATION POLICIES IN CHINA (SWISSNEX SHANGHAI)

Innovation Policy | China

Overview

China is heading towards a high performing national system of innovation from 2006 to 2020. Guiding policies related include *Medium and Long Term S&T Development Plan 2006-2020*, *5-Year-Plan for Science and Technology Development* (11th-2006-2011, 12th-2011-2015, 13th-2016-2020), and guidelines issued by the State Council. The goal by 2020 is to build an efficient and high performing national system of innovation and to become an innovative country.

Concerning the key objectives 2020, the R&D intensity is about to reach 2% of GDP by 2010, and 2.5% by 2020 (2011: 1.87%), S&T and innovation to contribute 60% of GDP growth (2011: around 40%), dependence on foreign technology to be reduced to less than 30% (2011: around 41%), and to be among the top five worldwide in terms of number of domestic invention patents granted and number of international citations of scientific papers (2009: invention patent granted : #3, 2011: number of citations: #6).

As the national political operation model is top to bottom, the central government makes the policy first, for example, the 5-Year-Plan, and then the provincial government will act according to it, including making policies based on local situations and then goes to the municipal level. For those municipalities directly under the central government, the procedure goes as: central government-municipality- district. The acting model is the same as that among central government, provinces and cities.

Departments / Ministries

In the central government, the state council takes the leading role in making national plans, under which there are several ministries in charge of innovation and entrepreneurship, namely:

Name		Mission	Remarks
State Council	National Development and Reform Commission	Make general plans about the construction of innovation zones, incubators, land use, etc.	
	Ministry of Education	Make education reform, certifying internship and entrepreneurship base for graduates, etc.	
	Ministry of Science and Technology	Make plans of training talents, building and upgrading maker spaces and incubators, organizing innovation competitions, forming consulting group of experts, etc.	
	Ministry of Industry and Information Technology	Offer guidance of enterprise transformation and development; manage the construction of exemplary innovation bases, copyright issues, etc.	
	Ministry of Finance	Offer regulations on investment, taxation,	

		loans as well as preferential policies.	
	Ministry of Human Resources and Social Security	Help with talent training, building entrepreneurship bases and incubators for graduates, oversea returnees, etc.	
	Ministry of Agriculture	Enhance innovation service among farmers; promote technical innovation of agricultural products, etc.	
	Ministry of Commerce	Offer suggestions concerning trade, investment, commerce, etc. International investment included.	
	Ministry of Culture	Focus on cultural enterprises.	
	People's Bank of China	Focus on payment, account management, credit system building and financial services on innovation, etc.	
	National Audit Office	Audit and supervision.	
	State Administration of Taxation	Make regulations of taxation.	
	State Administration of Industry and Commerce	Manage company registration, business license, market order control, etc.	
	China Banking Regulatory Commission	Offer regulations on financial service.	
	China Securities Regulatory Commission	Focus on stock market regulations.	
	China Insurance Regulatory Commission	Focus on insurance market regulations.	

**Some links are in Chinese because of the lack of English version.*

The department formats of the state and local government are almost the same with same key responsibilities. In the municipal level, the Committee of Science and Technology takes the leading role in organization concerning innovation and entrepreneurship. The operation model is as following: firstly, after the central government releases its 5-year-plan, according to which general plans of innovation and entrepreneurship follow, the provincial government will have its own plan under the guidance of the central one. Then, the municipal government will make localization and carry out its own plan based on the provincial guidance. So comparing to the provincial plan, the municipal one is more specific and focuses more on execution.

In the following parts, innovations policies that have been released in China since 2011 will be presented, namely, State Government, Beijing Municipal Government, Shanghai Municipal Government, Guangdong Provincial Government (with Shenzhen as a model case) and Sichuan Provincial Government (with Chengdu as a model case).

Cases have been selected because they are viewed as the first batch of trial areas concerning innovation and entrepreneurship policy at present, which have also turned out to be success stories that will be imitated by other regions in the future.

Policies

➤ State Government

Date	Name	Ministry	Details	Link
2011.11.14	Announcement of further supporting enterprises in technique innovation	The State Council	The announcement is released for the governments of every province, autonomous region, municipality and city to further enhance technical innovation ability, service system, support and promotion and talents gathering.	http://www.gov.cn/zhengce/content/2016-09/22/content_5110754.htm
2012.08.05	Approval of building Wuxi national innovation demonstration zone for sensor networks		An approval for a city-level innovation zone in Jiangsu province.	http://www.gov.cn/zhengce/content/2012-08/13/content_3342.htm
2013.01.15	Announcement of releasing the 12 th 5-year plan concerning the construction of national independent innovation capability		A review of the 11 th 5-year plan about innovation, an analysis of the current status of innovation and an illustration of the 12 th are introduced, including aim and main missions, etc.	http://www.gov.cn/zhengce/content/2013-05/30/content_5186.htm
2013.01.28	Suggestions on enhancing innovation capability of enterprises		Highlight major tasks including enhancing innovation mechanism input, building research institutes, promoting the production process of technological achievements, offering financial support, etc.	http://www.gov.cn/zhengce/content/2013-02/04/content_5547.htm
2014.10.30	Suggestions on promoting the transformation and upgrading of national economic and technical development zone		Suggestions include promote the innovation of mechanism, stimulating the development of open economy, facilitating talent team building, encourage environmental friendly development, improving investment context, etc.	http://www.gov.cn/zhengce/content/2014-11/21/content_9231.htm
2014.11.16	Suggestions on making innovation concerning investment and financing mechanism encouraging social investment		Suggestions include key areas regulations including environment and energy, specific departments in charges included.	http://www.gov.cn/zhengce/content/2014-11/26/content_9260.htm
2015.03.02	Suggestions on developing maker spaces and promoting innovation and entrepreneurship		Key document marking the beginning of Chuangke (Maker) project in China, which consists basic principles and major tasks:	http://www.gov.cn/zhengce/content/2015-

			<ul style="list-style-type: none"> -accelerating the pace of building maker spaces -lower the innovation and entrepreneurship barrier -encourage scientific talents and university graduates to star businesses -support public services of innovation and entrepreneurship -enhance funding support -improve mechanism of investment and financing -enrich activities of innovation and entrepreneurship -build the cultural atmosphere of innovation and entrepreneurship 	03/11/content_9519.htm
2015.06.11	Suggestions on promoting the policies concerning innovation and entrepreneurship		Based on the former suggestions, further illustrating the details.	http://www.gov.cn/zhengce/content/2015-06/16/content_9855.htm
2015.08.14	Approval of building the joint conference among ministries concerning innovation and entrepreneurship		Form the joint conference taking the lead concerning this issue, which is led by National Reform and Development Commission. The conference will be held 1-2 times per year, occasional meetings can be organized by leading ministries according to work requirements.	http://www.gov.cn/zhengce/content/2015-08/20/content_10109.htm
2015.09.23	Suggestions on facilitating building supporting platforms of innovation and entrepreneurship		<p>Build supporting platforms for "4 together" concepts:</p> <ul style="list-style-type: none"> - Innovate together: maker space, online platforms, internal innovation within companies -Work together: R&D, production, promotion, daily service -Support together: sharing among public resources and platform, companies, public orgs and experts from industries... -Collect funds together (crowdfunding): material objects, stock, online loan 	http://www.gov.cn/zhengce/content/2015-09/26/content_10183.htm
2016.04.12	Announcement of promoting Shanghai into the innovation center with global influence		<p>Main tasks include:</p> <ul style="list-style-type: none"> -build Zhangjiang national science center -build R&D and transformation center of key generic technologies -implement key strategic project and manufactures 	http://www.gov.cn/zhengce/content/2016-04/15/content_5064434.htm

			leading the development of the industry -promote the building of Zhangjiang national autonomous innovation exemplary zone	
2016.05.08	Suggestions on building exemplary bases of innovation and entrepreneurship		Main tasks include: -enlarge the development market -enhance the copyright protection -accelerate the commercialization of research outputs -enhance the financial support and that of taxation -promote the talent flow -enhance the sharing process of innovation devices	http://www.gov.cn/zhengce/content/2016-05/12/content_5072633.htm
2016.06.24	Approval of the innovation proposal of Beijing-Tianjin-Hebei system		Approval of regional proposal concerning innovation.	http://www.gov.cn/zhengce/content/2016-07/04/content_5088043.htm
2016.06.24	Approval of the innovation proposal of Guangdong province		Approval of provincial proposal concerning innovation.	http://www.gov.cn/zhengce/content/2016-07/04/content_5088049.htm
2016.06.24	Approval of the innovation proposal of Sichuan province		Approval of provincial proposal concerning innovation.	http://www.gov.cn/zhengce/content/2016-07/04/content_5088057.htm
2016.07.28	Announcement of releasing the 13 th 5-year plan concerning S&T innovation planning		Specific plan for 2016-2020 concerning innovation. Figures and tables of major targets, key national projects, key S&T projects, etc. have been included.	http://www.gov.cn/zhengce/content/2016-08/08/content_5098072.htm
2016.09.11	Announcement of promoting Beijing into the innovation center of the nation		Regulating timeline for Beijing concerning innovation and entrepreneurship. Main tasks include: -promote building 3 major S&T zones: Zhongguancun, Huairou and Future. -ensure the advanced plan of frontier researches -build the talent team of basic research	http://www.gov.cn/zhengce/content/2016-09/18/content_5109049.htm

			-build world leading universities and research institutes -etc.	
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**In red are highly important policies.*

**Ministry refers to those having released the policies.*

➤ Beijing

Date	Name	Ministry	Details	Link
2011.05 .31	Announcement of Initiating the Affirmation and Application of the 13 th Batch of Independent Innovation Products	Municipal Committee of Science and Technology	Encouraging enterprises, universities and research institutes to apply for affirmation of their own independent innovation products.	http://zfxgk.beijing.gov.cn/fgdyna.prinfodetail.prPlanDetailInfo.do
2011.06 .15	Announcement of Accelerating the Development of New Strategic Alliance Concerning Technical Innovation	Municipal Committee of Science and Technology	Main tasks include promoting achievement transfer, R&D, talent training, international cooperation, etc.	http://zfxgk.beijing.gov.cn/fgdyna.prinfodetail.prStatuteDetailInfo.do
2011.11 .30	Announcement of Selecting Important Scientific Innovation Award	Municipal Committee of Science and Technology	Including organization, assessing criteria, maximum number, etc.	http://zfxgk.beijing.gov.cn/fgdyna.prinfodetail.prStatuteDetailInfo.do
2012.03 .09	Announcement of Establishing Innovation Practice Base for PhD and Post PhD (2 nd batch)	Municipal Labor & Social Security Bureau	List of bases and working stations is included.	http://zfxgk.beijing.gov.cn/fgdyna.prinfodetail.prStatuteDetailInfo.do
2012.11 .30	Action Details of Supporting SMEs in Investment and Finance of Innovation	Municipal Bureau of Finance	Definition of supporting areas and sources of fund; Supporting methods and standard; Application Procedures; Fund management and supervision, etc.	http://zfxgk.beijing.gov.cn/fgdyna.prinfodetail.prStatuteDetailInfo.do
2013.09 .07	Suggestions on Enhancing the Role and Innovation Capability of Enterprises	Beijing Government	Make full use of R&D centers, companies, government, etc.	http://zfxgk.beijing.gov.cn/fgdyna.prinfodetail.prStatuteDetailInfo.do
2013.09 .24	Suggestions on Enhancing the Role and Capability of Enterprises concerning Technical Innovation	Municipal Committee of Science and Technology	Make full use of research institutes, companies; Optimize innovation environment of companies; enhancing organization, etc.	http://zfxgk.beijing.gov.cn/fgdyna.prinfodetail.prStatuteDetailInfo.do
2013.11 .26	Management Method of Improving S&T Innovation Capability of High Education System in Beijing	Municipal Education Committee	Regulations of the application procedure, organization, assessment, etc. of related projects.	http://zfxgk.beijing.gov.cn/columns/pubInfoOfCityMenu.html

2014.04 .14	2014-2017 Beijing Action Plan of Technical Innovation	Beijing Government	Innovate concerning management, policy insurance, hosting key projects, etc. Departments in charge and specific responsibilities are included.	http://zfxgk.beijing.gov.cn/fgdyna.priofodetail.prStatuteDetailInfo.do
2014.11 .06	Action Details of Building Reservation Mechanism of S&T Achievements Transfer Produced by Institutions of Higher Education	Municipal Committee of Science and Technology	Regulations of management, follow-up, support, etc.	http://zfxgk.beijing.gov.cn/fgdyna.priofodetail.prStatuteDetailInfo.do
2015.01 .08	Management Method of S&T Innovation Coupons in Beijing (Trial)	Municipal Bureau of Finance	Operation and management methods include application, distribution, and exchange of "Innovation Coupons". Organization format has also been illustrated.	http://zfxgk.beijing.gov.cn/fgdyna.priofodetail.prStatuteDetailInfo.do
2015.03 .20	Suggestions on Encouraging Social Investment on Key Areas concerning Innovation	Beijing Government	Key areas including environment protection, transportation, energy, regulation of shanty towns, new urbanization, social welfares, hi-tech industries, etc.	http://zfxgk.beijing.gov.cn/fgdyna.priofodetail.prStatuteDetailInfo.do
2015.06 .08	Action Methods of Promoting the Transfer of S&T Innovation based on Support of S&T Finance and Economy	Municipal Committee of Science and Technology	Methods including developing angel investment, S&T loans, insurance, S&T finance agencies, etc.	http://zfxgk.beijing.gov.cn/fgdyna.priofodetail.prStatuteDetailInfo.do
2015.09 .17	2015-2017 Action Plan of Creating Innovation Alliance among Beijing, Tianjin and Hebei	Municipal Committee of Science and Technology	Main principles including 3 axis development groups, "4+N". Main methods including building 3 mechanisms and 3 platforms, etc.	http://zfxgk.beijing.gov.cn/fgdyna.priofodetail.prStatuteDetailInfo.do
2016.03 .01				
2016.10 .11	Interpretation of Enhancing Beijing as the National S&T Innovation Center in the 13 th 5-year Plan Period	Municipal Committee of Science and Technology	With pictures and figures, analysis of current status of Beijing as a national innovation center as well as future plans in the 13 th 5-year plan period have been provided.	http://zfxgk.beijing.gov.cn/fgdyna.priofodetail.prStatuteDetailInfo.do
2016.10 .28	General Plan of Enhancing Beijing as the National S&T Innovation Center	State Council, Municipal Committee of Tourism Development	Forwarded policies from the state council. Main tasks include support the development of hi-tech economy, cooperation among Beijing, Tianjin and Hebei Province, establishment of international partnership, etc.	http://www.gov.cn/zhengce/content/2016-09/18/content_5109049.htm http://www.gov.cn/zhengce/content/2016-

				09/18/content_5109049.htm
2016.12.12	2016-2020 Action Plan of Innovation Spirit Cultivation in Beijing	Municipal Committee of Science and Technology	Overview, future plans and targets, departments in charge have been included.	http://zfxgk.beijing.gov.cn/fgdyna.printofdetail.prStatuteDetailInfo.do

➤ **Shanghai**

Date	Name	Ministry	Details	Link
2011.01.06	Suggestions of Promoting Yangpu as a Pilot District of Innovation	Shanghai Government	Innovate the mechanism; Build new industrial system; innovate the financial service; improve the level of internationalization, etc.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw2404/nw25247/nw25249/u26aw24311.html
2011.07.20	Announcement of Building Innovation Center for University Graduates	Municipal Committee of Education	Application requirements, assessment standards and fund support, etc. have been included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw28163.html
2011.09.02	2011 Guidance of Key S&T Projects under "S&T Innovation Action Plan"	Municipal Committee of Science and Technology	Key areas have been illustrated, including research contents, deadlines and budgets, etc.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw28520.html
2011.10.19	2011 Guidance of Fund Regulations concerning Yangpu as a National Innovation Trial District	Shanghai Government	Application requirements, supporting methods have been illustrated.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw28913.html
2011.12.12	Announcement of Setting the Expert Committee of Innovation and Entrepreneurship Education	Municipal Committee of Education	List of people in charge is included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw30166.html
2011.12.15	Suggestions on Promoting S&T Financial Service in order to Boost the Development of S&T enterprises	Shanghai Government	Clarify the target; Improve the loan service system; Offer financial support; Build service platform combing S&T and Finance, etc.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw10800/nw11407/nw25262/u26aw30195.html
2012.01.04	Release of S&T Innovation Projects 2012	Municipal Committee of Education	List of related projects.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw

				12344/u26aw30354.html
2012.06.08	Decisions on Innovation-driven Industry and Transformation concerning Further Development	Shanghai Government	Main tasks of different departments have been clarified.	http://www.shanghai.gov.cn/nw2/nw2314/nw3124/nw3134/nw5620/u6aw2246.html
2012.08.22	Guidance of Key Projects under 2012 Shanghai Action Plan of S&T Innovation	Municipal Committee of Science and Technology	Main projects, research contents, deadlines and budget have been introduced.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw33019.html
2012.09.21	Guidance of Cooperation in the Yangtze River Delta concerning 2012 Shanghai Action Plan of S&T Innovation	Municipal Committee of Science and Technology	Research fields, deadlines and partner areas are included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw33335.html
2013.02.07	Management Method of SMEs concerning Innovation Funds	Municipal Committee of Science and Technology	Supporting areas and methods, prior fields, application procedures, etc. are included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw34576.html
2013.09.12	Guidance of Shanghai 2013 R&D Platform of Action Plan of S&T Innovation	Municipal Committee of Science and Technology	Important related projects, application methods, etc. have been included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw36924.html
2014.04.08	2013-2017 Action Plan of "2011 Cooperative Innovation Center"	Municipal Committee of Education	Innovation centers include those of S&T, culture, industry and regions. Promotion methods are also included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw38711.html
2014.04.09	Guidance of Fundamental Field Research Fields of 2014 Shanghai Action Plan of S&T Innovation	Municipal Committee of Science and Technology	Important areas, research contents, etc. have been included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw38727.html
2014.12.02	Announcement of the Call for Application of the 2 nd Batch of Innovation Model Bases	Municipal Committee of Economy and Information	Application requirements, procedures and contacts are included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw40791.html
2015.03.31	Guidance of S&T Events of 2015 Shanghai Action Plan of S&T Innovation	Municipal Committee of Science and Technology	Qualified areas, application methods, etc. have been included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw42172.html
2015.04.08	Guidance of S&T Events of 2015 Shanghai Action Plan	Municipal Committee of	Projects, research contents, deadlines have been included.	http://www.shanghai.gov.cn/nw2/nw231

	of S&T Innovation concerning Cooperation at the Yangtze River Delta	Science and Technology		4/nw2319/nw12344/u26aw42292.html
2015.05.27	Suggestions of Shanghai Government on Building S&T Innovation Center with International Influence	Shanghai Government	Targets, general requirements are included. Methods include building market-oriented innovation mechanism, changing the management format of funds, fostering reform among research institutes, encouraging the engagement of enterprises, etc.	http://www.shanghai.gov.cn/nw2/nw2314/nw32419/nw39231/nw39232/nw39235/u21aw1016468.html
2015.07.06	Suggestions on Facilitating Talents concerning Innovation and Entrepreneurship	Shanghai Government	20 regulations in total have been listed.	http://www.shanghai.gov.cn/nw2/nw2314/nw32419/nw39231/nw39232/nw39235/u21aw1029039.html
2015.10.08	Suggestions on Promoting Financial Service Innovation in order to Support the Building of Shanghai S&T innovation Center	Shanghai Government	Innovate the loan service system, using multi-level capital market to support, enhancing the role of insurance service, etc.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw44624.html
2015.10.09	Suggestions on Promoting the Upgrading and Transformation of Shanghai National Economic and Technical Development Zone	Shanghai Government	Promote the innovation of mechanism, build new public economic platforms, facilitate the upgrading of industry transformation, etc.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw44866.html
2016.02.26	Suggestions on Using Copyright Issue to Support the Development of S&T Center	Shanghai Government	Detailed regulations including legislation, administration, etc.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw46653.html
2016.08.16	Shanghai S&T Innovation Plan in the 13 TH 5-year Plan Period	Shanghai Government	General requirements, specific missions and organization plans, etc. have been included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw48459.html
2016.11.24	Suggestions on Fully Build Yangpu as the National Model Center of Innovation and Entrepreneurship	Shanghai Government	Reduce the interference of government in the procedure of Innovation and entrepreneurship, build a market-oriented S&T achievement transfer mechanism, perfect benefit distribution mechanism, support the	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw50335.html

			development of investment and finance concerning innovation, etc.	
2017.01.06	Guidance of S&T Events of 2015 Shanghai Action Plan of S&T Innovation	Shanghai Government	Main targets, application and budgets, etc. have been included.	http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw50905.html

➤ **Guangdong Province**

Date	Name	Ministry	Details	Link
2011.03.10	Announcement of Awarding Method of Innovative Work concerning the Transformation of Economic Development Model at the Delta of the Pearl River	Guangdong Provincial Government	Including the principles, rules and processes of selecting innovative work award.	http://zwgk.gd.gov.cn/006939748/201103/t20110310_12852.html
2012.05.09	Announcement of Helping and Supporting Small and Medium Enterprises with Innovation		Methods and plans concerning the implementation of key projects.	http://zwgk.gd.gov.cn/006939748/201205/t20120509_314578.html
2012.08.28	Announcement of Hosting the Achievement Exhibition of Innovation and Entrepreneurship made by the Disabled		Information of the exhibition. The exhibition is hosted in order to encourage innovation and entrepreneurship among the disabled group.	http://zwgk.gd.gov.cn/006939748/201208/t20120828_341205.html
2012.10.31	Suggestions on Using Innovation and Cooperation as a Leading Power of Improving the Quality of Higher Education in Guangdong	Guangdong Provincial Ministry of Education	Including main requirements, implementation methods such as building new model of innovative development, building and improving innovation mechanism, making creative talent training model in the bachelor's level, promoting reform of high education concerning talent training, improving innovation ability of universities, improving social service capability, enhancing international communication and cooperation, etc.	http://zwgk.gd.gov.cn/006939748/201210/t20121031_351886.html
2013.10.09	Announcement of supporting the International Product Exhibition of Green Innovation in China	Guangdong Provincial Government	Regulations of organizing and task distributing and other requirements.	http://zwgk.gd.gov.cn/006939748/201310/t20131009

				9_408077.html
2013.12.09	2013-2015 Action Guidelines of Making Innovation concerning Methods Attracting Businesses and Investments	Guangdong Provincial Government	The guidelines include meanings, main requirements, goals, main tasks, etc.	http://zwgk.gd.gov.cn/006939748/201312/t20131209_455755.html
2014.11.17	2014-2020 Action Plan of Promoting the Integration of Innovation concerning Science and Technology at the Delta of the Pearl River	Guangdong Provincial Government	Including actions concerning technical resources sharing, breaking through difficulties of key technological projects, industrial cluster, social security and people's livelihood, cooperation between scientific and financial areas, independent copyright, etc.	http://zwgk.gd.gov.cn/006939748/201411/t20141117_555394.html
2015.02.26	Suggestions on Accelerating Innovation concerning Science and Technology	Guangdong Provincial Government	Applying "Innovation Coupon" as a financial support; Perfecting land policies concerning incubators;	http://zwgk.gd.gov.cn/006939748/201502/t20150226_570220.html
2015.06.04	Announcement of Innovating Investment Management Method	Guangdong Provincial Government	Main tasks include building online supervision platform, enhancing information disclosure procedure, perfecting awarding and punishing system, etc.	http://zwgk.gd.gov.cn/006939748/201506/t20150604_584337.html
2015.07.06	Suggestions on Perfecting Investment and Financing Mechanism of SMEs	Guangdong Provincial Government	Build platforms, development funds; Perfect loans risk compensation mechanism of SMEs; increasing the role played by banks, etc.	http://zwgk.gd.gov.cn/006939748/201507/t20150706_589533.html
2015.10.10	Announcement of Deepening Using Copyright Strategy to Promote Innovation	Guangdong Provincial Government	Detailed regulations concerning copyright issues to foster innovation and invention.	http://zwgk.gd.gov.cn/006939748/201510/t20151010_622725.html
2015.12.23	Announcement of Copying and Promoting the Success Story of Guangdong Free Trade Zone (1 st batch)	Guangdong Provincial Government	Main tasks and list of task distributions.	http://zwgk.gd.gov.cn/006939748/201512/t20151223_634371.html
2016.01.20	Announcement of Assessment of Innovation Works in Guangdong	Guangdong Provincial Government	Details of assessing method, procedure and organization, etc.	http://zwgk.gd.gov.cn/006939748/201601/t20160120_640261.html

2016.02 .22	Suggestions on Encouraging Social Investment in Key Areas	Guangdong Provincial Government	Main tasks and departments with different tasks have been clarified.	http://zwgk.gd.gov.cn/006939748/201602/t20160222_644761.html
2016.03 .29	Suggestions on Fully Promoting Innovation and Entrepreneurship	Guangdong Provincial Government	Main tasks including creating innovation market environment, building innovation brands, etc. Detailed supporting policies concerning loans, incubators, fund management, etc. are also included.	http://zwgk.gd.gov.cn/006939748/201603/t20160329_649604.html
2016.04 .11	Announcement of Promoting Action Plan of Upgrading and Innovation Development in Economic Technical Development Zone	Guangdong Provincial Government	Promote mechanism innovation; Facilitate transformation and upgrading; make green sustainable development; optimize trade and business environment, etc.	http://zwgk.gd.gov.cn/006939748/201604/t20160411_651126.html
2016.04 .25	2016-2020 Action Plan of Building Independent Innovation Sample Zone in the Pearl River Delta	Guangdong Provincial Government	Make appropriate definition of different areas with different emphasis; Increase the leading position of hi-tech zone; Deepen cooperation among Hong Kong, Macao and Taiwan; Enhancing core competitive capability of manufacturing industry; Increase the level of modern service industry; Develop strategic new industries; Create innovation industry groups; Increase the internalization level of industries; Accelerate the establishment and development of new R&D institutes; Foster cooperation among research institutes and industries; Perfect incubator system; etc. Departments in charge of different tasks clarified.	http://zwgk.gd.gov.cn/006939748/201604/t20160425_652836.html
2016.06 .13	Suggestions on Copyright Issue concerning Innovation and Development	Guangdong Provincial Government	Methods including developing copyright protection mechanism, promoting and increasing the quality, building incubator and hi-tech zone concerned	http://zwgk.gd.gov.cn/006939748/201606/t20160613_658637.html

			comprehensive service platform of copyright, etc.	
2016.09.02	Announcement of Copying and Promoting the Success Story of Guangdong Free Trade Zone (2 nd batch)	Guangdong Provincial Government	Main tasks and list of task distributions.	http://zwgk.gd.gov.cn/006939748/201609/t20160902_671241.html
2016.10.12	Announcement of Building Model Basement of Innovation and Entrepreneurship	Guangdong Provincial Government	Basement including research institutes and universities, regional model ones, companies-based ones, etc. Procedures and deadlines are also included.	http://zwgk.gd.gov.cn/006939748/201610/t20161012_675201.html
2016.11.07	Announcement of Building S&T Innovation Platform	Guangdong Provincial Government	Targets include building 100 platforms or public service institutes by 2020, etc. Main tasks including building provincial labs, etc.	http://zwgk.gd.gov.cn/006939748/201611/t20161107_678308.html
2016.11.22	Announcement of Promoting Reform Action of Innovation and Trial	Guangdong Provincial Government	Main tasks with departments in charge have been included.	http://zwgk.gd.gov.cn/006939748/201611/t20161122_681245.html

- **Case: Shenzhen**

Date	Name	Ministry	Details	Link
2011.07.26	Methods of Awarding Industry Development and Innovation Talents in Shenzhen	Shenzhen Government	Including details of application and organizing.	http://www.sz.gov.cn/zfwj/zfwj/szfwj/201510/t20151016_3282446.htm
2011.12.08	2011-2013 General Action Plan of Building Shenzhen as a National Innovative City	Shenzhen Government	Enhancing the building of high-level universities and research institutes, building public technical service system, improving promotion plans, fostering new industries such as	http://www.sz.gov.cn/zfwj/zfwj/szfwj/201510/t20151016_3282846.htm
2012.11.02	Announcement of Deepening Technical Mechanism Reform to Improve Technical Innovation Capabilities	Shenzhen Government	Sharing of equipment and manufacture introduced by government financial funds, supporting talents transferring among research institutes and companies, copyright funds distributions, etc.	http://www.sz.gov.cn/zfwj/zfwj/szfwj/201510/t20151016_3282725.htm
2012.11.04	Decisions on Building National Independent Innovation Sample Zone	Shenzhen Government, CPC Shenzhen Municipal Committee	Missions, general requirements including building industrial groups, enhancing organizing strength, etc.	http://www.sz.gov.cn/zfwj/zfwj/hfw/201510/t20151016_3282728.htm

2013.01 .07	Announcement on Accommodation Management of Innovation Industries	Shenzhen Government	Detailed regulations concerning accommodation.	http://www.sz.gov.cn/zfwj/zfwj/szfbgtwj/201510/t20151016_3283288.htm
2014.03 .15	Guiding Suggestions on Supporting Financial Innovation concerning Internet	Shenzhen Government	Including building financial security system, supporting system; innovating concerning operation model, etc.	http://www.sz.gov.cn/zfwj/zfwj/szfwj/201510/t20151016_3283600.htm
2014.08 .04	Building Leading Committee of National Independent Innovation Sample Zone in Shenzhen	Shenzhen Government	Details about members of the committee and main responsibilities.	http://www.sz.gov.cn/zfwj/zfwj/szfh/201510/t20151016_3283801.htm
2015.07 .22	Action Plan of Building National Independent Innovation Sample Zone in Shenzhen	Shenzhen Government	Specific targets including reaching 10000 national hi-tech companies till 2020, etc. Main tasks including supporting SMEs to innovate and responsibilities of different departments have been clarified.	http://www.sz.gov.cn/zfwj/zfwj/szfwj/201510/t20151016_3283862.htm
2016.05 .06	Announcement of Copying and Promoting Success Story of Shekou Area	Shenzhen Government	Task distributions and main issues and experience that can be promoted.	http://www.sz.gov.cn/zfwj/zfwj/szfh/201611/t20161103_5206281.htm
2016.08 .08	Suggestions on Fully Promoting Innovation and Entrepreneurship	Shenzhen Government	Innovate mechanism, optimize financial and tax policies, enhance supports on entrepreneurship, realize interaction between industry and investment, build new platforms, etc.	http://www.sz.gov.cn/zfwj/zfwj/szfwj/201611/t20161103_5206356.htm
2016.10 .26	Announcement of Implementing the Awarding of Innovation Talents	Shenzhen Government	Details of management, application requirements, awarding criteria and supervision format, etc.	http://www.sz.gov.cn/zfwj/zfwj/szfwj/201612/t20161207_5616304.htm

Curriculum Vitae

EDUCATION

PhD in Architecture and City Sciences – EPFL, Lausanne, Switzerland

Feb 2016 – Jan 2020

- Thesis on innovation communities in urban China
- Visiting scholar at Digital China Lab (CCAT), Curtin University 2017 (3 weeks), Perth, Australia
- Visiting scholar in the Program on Creativity + Innovation at New York University (NYU) Shanghai 2017 (3 months), Shanghai, China
- Fieldwork in Shanghai, Shenzhen and Beijing for conducting interviews and collecting data on makerspaces

Master in Pluridisciplinary Asian Studies - Université de Genève & Graduate Institute, Switzerland

Sep 2010 – Nov 2012

- Thesis on creative hybrid spaces in Beijing
- Minor in Contemporary Asian Studies, EPFL
- Exchange year at Peking University (PKU / BEIDA), China

Bachelor in Social Anthropology - Universität Bern, Switzerland

Sep 2007 – Aug 2010

- Thesis on Migration
- Minor in Slavonic Studies
- Erasmus exchange term at University College London (UCL), UK

ACTIVITIES DURING PhD

2016

- EPFL Doctoral **courses** (2016-2017)
- REGARD Workshop on “Effective Presentations” in 5 slides, presentation (PPT)
- **Summer School** City and Cognition (EPFL-ETHZ) working paper, with credits for doctoral school “Creative and innovative hubs in Chinese cities : society, state and urban space” (PDF)
- MINTT Management of Innovation and Technology **course** – EDOC, TTO office, Scala case study, with credits for doctoral school
- Fieldwork 6 weeks in China
- **Assistant** for MACS summer school in Shanghai 10 days partly with F. Graezer Bideau, partly alone with students (31 August – 10 September)
- Business Concept Training (BCT) **course**, “TWIICE project” (PPT), with credits for doctoral school
- **Assistant** for course “Asian Studies”, F. Graezer Bideau

2017

- CRESSON **winter school** on soundscapes and urban settings, sonic report
- Memory and the City **course**, PoliTo Torino and EDAR (co-organized by F. Graezer Bideau)
- **Candidacy exam** (February)
- Co-organisation (with FDFA and diplofoundation) of the **ASEM Day** at EPFL (1 March)
- Participation to the writing of the **paper** for CHI 17 with Clément Renaud, Florence Graezer Bideau and Marc Laperrouza (PDF): “Making the city : re-assembling spaces of manufacturing”
- **Co-organisation of workshop** “How to study makerspaces”, Ateliers de Renens, (17-19 May)
- Co-preparation of the proposal for the **conference** “Norms and Narratives” in Neuchâtel which has been presented by Florence and Clément in Fall 2017 (while I was in Shanghai)
- English for Academic Writing course, EPFL, EDOC

- **World Humanities Conference**, Liège, presentation with Michael Keane "China's Digital Diversity and the Sharing Economy in the New Era of National Sovereignty" (August)
- Fieldwork 3 months in China
- **Presentation** at Xinchejian (makerspace in Shanghai), for a delegation organized by Tongji University Shanghai "Makerspaces in China: Cities, Spaces and Connections: Research Project" (October)
- **Presentation at Citizen Sciences Group**, University of Geneva: "Makerspaces: politics and communities of innovation in China: Feedback from the field and discussion" (14 December)

2018

- Private travel to **Kenya and Ethiopia** feeding a part of the thesis on a project between SZOIL and I Coglabs (Ethiopia), China-Africa links, meeting with local minister, start-ups, Swiss embassy etc. (2 weeks)
- **Co-organisation of workshops** in Shanghai and Shenzhen (February-March) and fieldwork "Mapping spaces for making" - <http://mapmakers.space>
- Presentation at **Chinese Internet Research Conference**, Leiden, Netherlands, "Makers in China: a Model to Export?" (22-23 May)
- **Tech4Dev conference**, EPFL, Lausanne "Open Innovation for Development: an Educative and Entrepreneurial Project between Shenzhen and Addis Ababa" (poster) (27-29 June)
- **IIAS Asia-Africa conference**, Tanzania (September) (accepted but participation canceled)
- Presentation of research at Florence Graezer Bideau's class: Asian (9 October)

2019

- 3 weeks Fieldwork in China
- **Urban Creativity Conference** "La Chine, un défi méthodologique pour les sciences humaines et sociales. Réflexions sur les nouvelles approches", University of Lund, Sweden (15-18 May) "Makerspaces in China"
- **Journée d'étude**, EHESS Marseille, France (26 July) "Mouvement maker en Chine : dynamiques des espaces liminaux et hybrides dans le tissu urbain chinois"
- **Presentation** of research at Florence Graezer Bideau's class: Asian Studies (15 October)
- Handing in Thesis (December)
- Publication of **book chapter** as co-author in *REALTIME: Making Digital China. PURR Lausanne* "Mapping spaces of making" with Clément Renaud, Anaïs Bloch and Emanuele Protti (December)

2020

- Oral Exam (22 January)
- Public Defense (27 March)

CERTIFICATES

- Develop resilience facing changes / 2019
- Prince 2 Foundation Certificate in Project Management / 2018
- Sustainable Negotiation Skills / 2017
- CTI Entrepreneurship Training: Business Concept Swiss Federal program / 2017
- Management of Innovation and Technology Transfer MINTT-EPFL / 2016

WORK & VOLUNTEERING EXPERIENCES

Doctoral Assistant/researcher – EPFL, Lausanne, Switzerland

Feb 2016 – Jan 2020

Assistant at the Institute of Global and Area Studies (IAGS) of the College of Humanities (CdH) and PhD Candidate at the Doctoral School for Architecture and Sciences of the City with a specific focus on politics, communities and spaces of innovation in China and the maker movement (funded by SNF). Assistance for Shanghai Summer School 2016, coordination of ASEM Day 2017, organization of multidisciplinary workshops (Renens 2017 and Shanghai + Shenzhen 2018), conferences and publications

Program Officer – Swiss Embassy, Beijing, China

Sep 2014 – Nov 2015

Contribution to innovative approaches in the field of cooperation such as policy dialogue for poverty reduction and Public Private Partnerships for Development (PPDP), and also the programme methodologies. The tasks included: creation of experts' network, event co-organisation (symposia, roundtables, conferences), representation of the Embassy/SDC at events, preparation and writing of analysis and occasional field visits

Events Officer – Swiss Chinese Chamber of Commerce in Beijing, China

Feb 2014 – August 2014

Event organization: Sino-Swiss Economic Forum (SSEF 2014) research of venue, budget management, coordination with sponsors, Swiss companies and other partners including the Embassy of Switzerland

Freelance and Volunteer – Various

2008– 2017

Freelance translator from German to French with mandates from University of Basel, Swiss Association for Music Therapy, Swiss Cable Cars, Merck Group, Swiss Distributors of General Motor

Volunteering – Various

2004– 2010

Volunteering in diverse projects such as with the Red Cross in Bern, SCICH in Azerbaijan, Valparaiso 2006 in Chile and AFS Intercultural Exchanges in Ecuador and Switzerland

LANGUAGES

French: mother tongue

Swiss German: second mother tongue

German: proficient

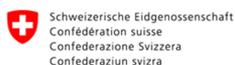
English: proficient

Spanish: proficient

Mandarin Chinese: intermediate

Russian: basic

Italian: basic



Embassy of Switzerland in China
瑞士驻华大使馆
Science, Technology and Education Section
科技与教育处



Swiss Spotlight

Scientist: Knowledge and Innovation: New Ways to Create Bridges

(Monique Bolli, August 23)

Monique Bolli is a doctoral assistant at the College of Humanities at EPFL. She is a social anthropologist (University of Bern) specialized in Asian Studies (University of Geneva, Graduate Institute and Peking University). She is currently finalizing her PhD on communities and politics of innovation in urban China, more specifically on the makerspaces and the maker movement in Shanghai, Shenzhen, Beijing and Addis Ababa. Not only are the communities - at the edge of the start-up world - of interest, the global outreach and impact of the Chinese ecosystem and innovation strategies, which led her to Ethiopia, are also fascinating. In the context of her multidisciplinary research, she has been part of New York University Shanghai in China and Curtin University in Australia. Prior to joining EPFL, she was working at the International Cooperation Division of the Embassy of Switzerland in China on policy dialogue for poverty reduction, Public-Private Partnerships for Development (PPDP) and trilateral cooperation. Additionally, and before that, she was working at the Swiss-Chinese Chamber of Commerce in Beijing. Creating bridges is essential.



<http://swissinnovation.org/newsChina/web/2019/00-190823-c3>

Startup: Pioneers in Contactless Micro Handling

(Touchless Automation, August 20)

Touchless Automation was born in the middle of the famous Swiss Watch Valley. The push for quality and perfection allowed them to develop a revolutionary technology that allows the manipulation of components in a contactless way. Leveraging this technology, Touchless Automation developed its own line of contactless industrial machines. These machines can perform a wide range of operations, all by never touching the target component. His patent pending technology is based on manipulation with air flows and vibrations, hence it can manipulate any material: silicon, glass, plastic, metal or any other. The company is strong in the optoelectronics, MEMS and micro-optics markets, where surface perfection and quality are of the utmost importance. The main product is Levio, a contactless automatic pick and place machine. The main applications are the sorting of laser diodes, image sensor, VCSELs, micro-optics and MEMS. Touchless Automation has already found customers from 3 different continents and it is now expanding further, with trade exhibitions in China, Germany and USA already planned for the coming months.



<http://swissinnovation.org/newsChina/web/2019/00-190820-f7>

Simulations de négociations lors de l'ASEM 2017. © DFAE



POLITIQUE

Dialogue Asie-Europe (ASEM) : une journée pour s'essayer aux relations diplomatiques entre l'Europe et l'Asie

Le 1^{er} mars, une soixantaine d'étudiants se sont glissés dans la peau de délégués nationaux pour une simulation de négociations du Dialogue Asie-Europe, l'ASEM, à l'EPFL à Lausanne.

L'événement intitulé « Model ASEM Switzerland Spin-Off 2017 » a été organisé à l'occasion de la Journée internationale de rencontre entre Asie et l'Europe. Mis sur pied par le DFAE en partenariat avec DiploFoundation, le Collège des Humanités de l'EPFL, MUN EPFL (Model United Nations) et la Fondation Asie-Europe, il a offert aux jeunes une occasion de vivre de l'intérieur comment se déroulent les discussions multilatérales et de faire ensuite des recommandations concrètes aux membres de l'ASEM.

Le Dialogue Asie-Europe (ASEM) est un forum intergouvernemental qui réunit des pays des deux continents pour discuter de thèmes politiques, économiques et socio-culturels d'intérêt commun et renforcer les relations entre l'Asie et l'Europe. Etabli en 1996 sur la base du constat que les deux régions du monde avaient besoin d'un point de rencontre, l'ASEM compte 51 Etats et les deux organisations de l'UE et du Secrétariat de l'ASEAN, et permet de créer et développer des liens entre ses pays membres et de

faciliter le dialogue multilatéral. Les pays membres totalisent ensemble aujourd'hui le 60% de la population et près de 60% du produit intérieur brut mondiaux.

La Suisse est membre de l'ASEM depuis 2012, et participe régulièrement aux sommets et conférences du forum. Ses réunions sont une occasion importante d'entretenir le dialogue avec les différents pays d'Asie, et d'avoir une vue d'ensemble des relations entre l'Asie et l'Europe. La Suisse participe ainsi à des initiatives et des projets concrets qui s'inscrivent dans ses priorités de politique étrangère.

Le « Model ASEM » est une simulation politique d'un Sommet de l'ASEM dans lequel les participants jouent le rôle des différents pays, prennent position, négocient et s'accordent sur un texte final. Celui-ci est ensuite présenté par les jeunes aux Etats membres de l'ASEM, et ses recommandations serviront à nourrir la réflexion sur l'avenir des relations entre l'Asie et l'Europe. La journée du 1^{er} mars à l'EPFL a débouché sur une table ronde avec des représentants officiels de l'Indonésie, l'Union européenne, la Fondation Asie-Europe et la Suisse.

Les simulations de négociations permettent de faire connaître l'ASEM et les thèmes d'intérêt partagés entre les deux continents. Elles sont une occasion de se plonger dans le fonctionnement des négociations internationales dans les enceintes multilatérales. Pour les étudiants, l'exercice demande des capacités à parler en public, savoir exposer et défendre des idées, travailler en équipe et faire preuve de leadership. Et surtout, il n'est rien sans une bonne préparation pour connaître les enjeux des discussions et les positions des pays qu'il s'agit de représenter, le temps d'une journée.

Monique Bolli, assistante-doctorante au CDH

« C'était une super opportunité pour nous de collaborer avec de telles organisations pour un événement entièrement dédié aux étudiants. Les débats, intéressants, ont montré la capacité des délégués à construire des solutions en un temps limité. »

Témoignage de Clémence Beghini, MUN-EPFL



BRÈVE

POLITIQUE

"L'innovation en Suisse a besoin de davantage d'investissements"

— Professeur au Collège de management de l'EPFL, Dominique Foray est l'un des auteurs du premier Rapport fédéral sur la recherche et l'innovation en Suisse, présenté fin avril à Berne. Il souligne et explique la position du pays dans les classements internationaux et plaide pour un "Fonds pour l'avenir", pour stimuler le développement des jeunes pousses, particulièrement dans les domaines liés à l'informatique, qui peinent à trouver des investisseurs malgré les potentiels énormes.