Urban Modes of Assemblage: The Changing Spaces of Innovation in Shanghai

Modes d'assemblage urbains : la dynamique des espaces de l'innovation à Shanghai

Modos de “montaje urbano”: la dinámica de los espacios de innovación en Shanghai

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Résumé de l'article

Cet article considère l'évolution des relations entre quatre organisations situées à Shanghai (deux espaces de coworking, un hackerspace et un réseau public d'espaces dédiés à l'éducation) entre les années 2011 et 2015. Nous commençons par décrire comment les politiques urbaines de Shanghai conduisent au développement de vastes biens immobiliers qui ont échoué à soutenir des initiatives plus petites et moins formelles. En nous basant sur des travaux de recherche et de terrain antérieurs, nous montrons comment des groupes de personnes ont commencé à s'organiser dans le but de définir de nouveaux espaces de discussion et d'activités autour de l'innovation technologique et de l'entrepreneuriat. Pour chacun des quatre organismes sélectionnés, nous donnons un compte rendu détaillé de leurs développements spatiaux et organisationnels au fil du temps, et comment ils se rapportent les uns aux autres. Nous proposons ce que nous appelons des « modes d'assemblage » pour comprendre comment cette dynamique a contribué à changer le discours et le positionnement de Shanghai sur l'innovation, préfigurant les grands programmes nationaux.

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ABSTRACT

The present article considers the evolution of relationships between four organizations located in Shanghai (two coworking spaces, a hackerspace and a public network of spaces dedicated to education) between the years 2011 and 2015. We start by describing how Shanghai's urban policies lead to the development of vast real estate that failed at supporting smaller and less formal initiatives. Drawing from previous research and fieldwork, we show how groups of individuals started to organize with the goal of defining new spaces for discussions and activities around technological innovation and entrepreneurship. For each of the four organizations selected, we give a detailed account of their spatial and organizational developments over time, and how they relate to each other. We propose what we called “modes of assemblage” to understand how discrete and partial associations between them helped to change Shanghai's discourse and positioning about innovation, prefiguring major national programs.

Keywords: Shanghai, open innovation, assemblage, third places, makers, communities, urban development

RÉSUMÉ

Cet article considère l'évolution des relations entre quatre organisations situées à Shanghai (deux espaces de coworking, un hackerspace et un réseau public d'espaces dédiés à l'éducation) entre les années 2011 et 2015. Nous commençons par décrire comment les politiques urbaines de Shanghai conduisent au développement de vastes biens immobiliers qui ont échoué à soutenir des initiatives plus petites et moins formelles. En nous basant sur des travaux de recherche et de terrain antérieurs, nous montrons comment des groupes de personnes ont commencé à s'organiser dans le but de définir de nouveaux espaces de discussion et d'activités autour de l'innovation technologique et de l'entrepreneuriat. Pour chacun des quatre organismes sélectionnés, nous donnons un compte rendu détaillé de leurs développements spatiaux et organisationnels au fil du temps, et comment ils se rapportent les uns aux autres. Nous proposons ce que nous appelons des « modes d'assemblage » pour comprendre comment cette dynamique a contribué à changer le discours et le positionnement de Shanghai sur l'innovation, préfigurant les grands programmes nationaux.

Mots-Clés : Shanghai, innovation ouverte, assemblage, tiers lieux, makers, communautés, développement urbain

RESUMEN

Este artículo analiza la evolución entre los años 2011 y 2015 de las relaciones entre cuatro organizaciones radicadas en Shanghai (dos espacios de coworking, un hackerspace y una red pública de espacios dedicados a la educación). Empezamos describiendo cómo condujeron las políticas urbanas de Shanghai al desarrollo de grandes activos inmobiliarios que no consiguieron apoyar iniciativas más pequeñas y menos formales. Basándonos en nuestras investigaciones y publicaciones anteriores, mostramos cómo se han organizado grupos de personas para definir nuevos espacios de discusión y actividades en torno a la innovación tecnológica y al espíritu empresarial. Para cada una de las cuatro organizaciones seleccionadas, presentamos en detalle su desarrollo espacial y organizacional a lo largo del tiempo, y de sus interrelaciones. Proponemos lo que llamamos “modos de montaje” para entender cómo ha ayudado esta dinámica a cambiar el discurso y el posicionamiento de Shanghai sobre la innovación, que ha prefigurado los grandes programas nacionales.

Palabras Clave: Shanghai, innovación abierta, montaje, terceros lugares, makers, comunidades, desarrollo urbano

The quick expansion of urban population has deeply transformed Shanghai's urban landscape during the last decades. Since the 1990s, the city has turned into a major instrument for China's renewal program under the lead of its ex-mayor Jiang Zemin then president of the country (Sanjuan, 2001). Welcoming international trends, it seeks to become a top destination for new industrial trends and creative industries in particular. Following global examples of the so-called cluster policy, the city government started in 2005 building and restoring large office spaces to house young companies that were to become the future jewels in the city's crown (Keane, 2013). After two decades of these policies, the results are mixed. These gigantic buildings developed into

a very profitable real-estate model, but failed to bring forth a network of individuals and small companies that would support the growth of a local industry in the creative sector. Yet outside the walls of these office buildings, smaller groups of local and foreign actors gathered in new urban spaces to reflect on practices of technologies, culture, and entrepreneurship through “sharing” and “making”. Influenced by similar experiments in North America and Europe, these organizations helped to identify and establish local domains of expertise, becoming references for innovators across China (Lindtner, 2015). Local public policies came to recognize these trends and eventually give birth to a larger network of similar or inspired spaces.

Previous works have provided a detailed account of the initial creation of these spaces and shown how these communities have come to recognize themselves and being recognized as important stakeholder in China's industrial future (Lindtner, 2014). Drawing from these results, the present article brings light on organizational events and processes that were instrumental in the creation of new modes of cooperation and points of shared interests between actors related to innovation in the city. We envision urban realities as a set of partial, historical and sometimes ephemeral networks where ideas, practices and representations circulate between distant places and moving people. Therefore, the present work does not aim at defining definite models or objects, but focus on describing sequences of transformations, adjustments and their eventual effects. We look at four emblematic organizations in Shanghai to consider how their interactions took part in the reconfiguration of the local participation of online networks, non-profit groups, companies and governmental organizations in the spatial conception of urban innovation. We show how the processes tying these organizations together is articulated first around places they inhabit that we call *third places*, second around common practices of work and collaboration often known in the literature under the term *open innovation*. Based on these observations, we describe *modes of assemblage* that support our understanding of the role of different spatial and organizational models (non-profit, event-based, directed towards international or local community, etc.) in the making of a cooperation network of organizations and institutions.

The first part of the paper exposes the situation and challenges faced by the municipality of Shanghai after 10 years of policies focused on building creative clusters. Then we introduce our theoretical framework and clarify the acceptations of urban assemblage, open innovation and third places in the context of this research. We go on to explain the protocol and methodology we followed. For each of the four organizations selected, we introduce their background and business model. We take inventory of their spatial changes (moving, relocating, opening or closing of new space, etc) to understand how it did affect the whole networks of these organizations. We also consider the discrete sequence of events that tied these organizations together over the years 2011 to 2015. We discuss this results by proposing *modes of assemblage* that describe how the changes in organizations relates to space and time of the city. We conclude on more recent local developments in Shanghai and the need for spatial and historical perspective in policies dedicated to urban innovation.

Shanghai: The Need for Urban Forms to support the Creative Economy

For decades, Shanghai has been exposed to cultural influences from around the world (Henri & Zheng 1999), bringing together a vast array of industrial sectors. Model of development for other cities wishing to raise their global profile (Yusuf & Wu, 2002; Ren & Weinstein, 2008), Shanghai has become the key-

stone of China's soft power internationally. In 2004, the city of Shanghai started to set up vast infrastructures to support the development of a creative sector, placing at its center the creation of Creative Industry Clusters (CIC)¹. The Shanghai municipal government tasked CICs with bringing together companies in the cultural sector in the same physical space to foster their development. Starting in 2005, the Shanghai city government began to develop multiple clusters, either renovating abandoned factories like Tian Zi Fang and M50 (Lu Pan, 2008) or building new business centers for companies. More than a micro-economic initiative, the cluster policy in Shanghai was the expression of an ideological shift towards an urban development based on creative economy (O'Connor & Gu 2014). Influenced by Florida's theories, CICs were supposed to create the conditions for a creative class to emerge, pushing the modernization of the city and the country's economy.

Since the beginning of the 2004-2010 plan, more than 90 created CICs has been created through the city. This rapid development has led to the creation of vast pool of resources, often concentrated in the hands of large, state-owned companies, without much redistribution and sharing of expertise (Zhou & Jianfei, 2013). The clusters also seemed incapable of welcoming foreign companies, due to a lack of a culture of hospitality and the absence of protection of the rights of employees and companies (Jianfei, 2011). In most regards, the CICs have developed a profitable model for the real-estate sector (Greenspan, 2014) but failed to foster the emergence of a creative economic network and a 'creative class' in Shanghai (Zheng & Chan, 2014).

*We urgently need to create an ecosystem for this sector, including professional training, protection of intellectual property, and appropriate regulations and public policies...We must combine international experience and local practice.*²

The CICs policy mostly missed his original target of supporting local SMEs (Keane 2013).

On the margins of cultural industry institutions, many organizations have nevertheless begun to reflect on the changes of patterns in working and running businesses. In Shanghai, communities bringing together artists, curators, advertisers, investors, start-ups, and the media have initiated multiple small and independent organizations (Lindtner, 2012). They played a synaptic role in establishing an international support network for local economic development of its participants, and provided a space to interact with local officials and government bodies.

Conceptual framework

The study of emerging communities tends to easily be framed under the false duality of top-down or bottom-up dynamics. The complex network of relationships that entangles urban reality lead us to accept that reality is sometimes less reductive. We do not believe that cities are an "out-there reality" but that they can to be understood as *assemblage*³ (Farias et Bender, 2012). In reaction to structuralism, Deleuze (1975) proposes

1. Shanghai municipal government, *Outline for the Cultural Development Planning for Shanghai 2004-2010*

2. Shanghai Municipal Government Information Office, *Development of Shanghai's cultural and creative industries*, 2013, accessed 13 April 2015, <http://en.shio.gov.cn/presscon/2013/07/12/1152451.html>

3. The present work does not aim at taking position in recent debates from anglophone radical geography (McFarlane, 2011; Brenner, 2011) about the relevance of the importation of Deleuze and Guattari's concepts into urban theory as renewal of the Marxist radical geography (Lefebvre, 1970; Castells, 1977; Harvey, 1973).

the concept of assemblage, *agencement* in French (concrete machines) and built its diagram theory (abstract machine) which he formalizes in 1977. Assemblage is the form and expression, as well as the sum of variations which spans and defines de stabilization or becoming coefficients. The diagram indicates the informal level of the forces without excluding diversity and possible relationships.

The methodological interest of the urban assemblage theory is to go behind the simple distinction being/becoming by analyzing with the concept of diagram different coexisting states. Instead of trying to reveal underlying political structures, the theory of urban assemblage formulates its political question as the study of “*how urban realities are made and remade in various contested practices*” (Farias & Blok, 2016).

The main takeaway of the assemblage is to state that we consider a dynamic reality, instead of a factual situation. The “models” that we could identify on a specific moment won’t necessarily appear under the same form some years later. Contradictory forms can coexist, oppose, or tolerate each other. The concept of assemblage is useful to think transformations, and go below the observations of each space to understand their relationships - which also change quickly. Moreover, assemblage allows us to think how changes in places and relationships modify the whole environment, the “context of contexts”. This successive and/or concurrent dynamics that we called modes of assemblage are not fixed network structures, but a succession of actions in time that transformed organizations - and here the urban fabric.

In this paper, we focus on four organizations that support innovative practices around technology, design and entrepreneurship by providing spaces to host these activities in Shanghai. Two of them identified themselves as coworking spaces (Xindanwei and People Squared) and one as hackerspace (Xinchejian). The fourth one (Innovation Houses) is a public network of places dedicated to educational and inter-generational encounters around making and handiwork. Each of these organizations fulfill different needs and objectives, but are tied together by a set of common relationships and practices that this paper intends to show. Coworking spaces and hackerspaces are emblematic for bringing together actors of innovation by locating into a single physical place (Fernandez & Puel, 2012). Loosely tied to a wider network of similar spaces all over the world, they often act as laboratory for new practices of team work, remote work or technological experiments (Lallement, 2015). Locally, such spaces can also provide a *middleground* (Cohendet & al, 2010) where creative individuals and initiatives without formal production, exploitation or diffusion can interact with larger institutions such as public services or companies. While the urban assemblage tends to be represented as a flat network, the *middleground* posits a specific positioning of these spaces towards other individuals and larger institutional actors.

In this study, we look at successive changes in these organizations’ business models, physical locations and positioning as part of a local *middleground*. We make the hypothesis that discourses around the “opening” of innovation processes have been a decisive factor of transformation and recombination of Shanghai’s *middleground* over time. The ‘open innovation’ paradigm, as described in the seminal work of H. Chesbrough (2003) (Chesbrough & Rogers, 2014) and as a “democratized

innovation” (Von Hippel, 2005) occurred also within the “spatial turn” movement (Van Marrejkick and Yanow 2010), which examines anchoring of organizations in a given geographical space. In this work, we describe how “open” practices such as sharing information and methods have been actualized differently in the four organizations, and how it has influenced their relationships and trajectory.

Research Protocol

We rely on eminently relational perspective to examine the transformations of four Shanghai-based organizations over a period of five years. Our goal is to understand how they served as synapses to bring different actors around themselves in a physical and virtual network of relationships - the *middleground*. We focus specifically on the sequence of three types of events from 2011 to 2015:

1. changes within the organizations themselves (closing, openings, etc),
2. spatial changes (moving and relocation, opening of new spaces, etc),
3. changes in the relationships between them (collaborations, common members, etc.).

Research for this study was conducted in three different phases.

The first was an extended period of participatory observation lead by one of the author in Shanghai in 2011-2012, which enabled the identification of interesting third-places, and cartography of these spaces and their associated actors. We focused on physical spaces that played an important role in building communities of people who wanted to experiment with new design and entrepreneurship methods. Some of these places were important zones of contact with international culture in art, design and innovation, primarily Californian and European. Based on these observations, three third-places were identified, following models defined in the relevant literature: coworking spaces and hackerspaces. The business models of the three spaces were different. Xindanwei and People Squared, as coworking spaces, earned money mostly by renting the space, whereas the hackerspace XinChejian counted mostly on memberships. Despite leading different activities in their spaces, all these organizations had the same purpose: to enable their members and users to develop new skills by defining or carrying out common professional or personal projects in their space. All were deeply involved in promoting a model of work ethics based on collaboration to other individuals, start-ups and organizations through multiple events and services in Shanghai.

The second phase of research the following year involved desk research to validate and document these models, particularly regarding their specificities in China. We took inventory of the existing literature, and gathered information from local press and websites around these organizations. During this phase, a fourth organization of interest was uncovered: the “*innovation houses*”. These organizations offered an unknown model, specific to Shanghai. They were funded by an initial investment of the district government to pay for setup and machines, and later support from the local community of residents (home-owners’ unions). Their goal was the transmission of manual

skills and technological know-how to young schoolchildren. We decided to include as part of this research for the different indirect relationships this public project was entertaining with smaller private initiatives.

In the third phase of research, we returned to China for fieldwork from March to October 2014 to visit and lead interviews of stakeholders of the four identified spaces. For each of the four organizations, an investigation was conducted *in situ*, including visits, drawing up an inventory of the various objects and equipment, and interviews with one or many of the key actors of these spaces. In all, 17 actors at the core of these communities were interviewed. The topics covered were the place's value proposition and business model, the sociological profiles of the users, relations with local and international actors (institutions, users, competitors, etc.), the idea and the practice of open source in their daily work context, in Shanghai and in China generally. These investigations *in situ* were supplemented by meetings with several important figures of the innovation ecosystem in China in the area of recruitment, research, and entrepreneurship⁴. Using the person-to-person method of the Chicago School (Gotman & Blanchet 1992), we gradually validated or enriched our study design for questioning these networks' key informants. We also conducted fifty interviews of users of these places in three different waves during 2013-2014 with a questionnaire in English and Chinese⁵ (Zhen, 2016). Triangulation of the collected information allowed us to assess the validity of our interpretations.

Results: Open Innovation Places in Shanghai

XINDANWEI: PIONNEERING COWORKING IN SHANGHAI

Xindanwei is a coworking space founded by a group of artists and digital art curators. Its story shows how an ephemeral space originally designed for events can be instrumental in the creation of a larger network of individuals and initiatives on the margins of institutional dynamics and foster development and importation of new ideas and practices locally.

The name *Xindanwei* was used to describe the 'new work unit' formed by this coworking space, in reference to *danwei*, the traditional 'work unit' of Chinese communist factories. Created in 2011, this coworking space hosted workshops, conferences, and discussions about design, art, technology and new ways of working in Shanghai and the world. Between 2010 and 2013, more than 250 events were hosted in the space⁶. Daily meetings took place at the cafe on the ground floor, while teams and freelancers were working in the offices on the upper floors. The very Western architecture of their second premises (located at the beginning of the French Concessions district in Shanghai) offered an atmosphere where foreign newcomers and Shanghaiese people met, shared their experiences on specific topics (urban planning, design, technology, etc.).

At the time of its opening in 2010, the concept of coworking was mostly unknown. One of the founder explains:

People were not attracted to this concept of coworking at all. Most people came in just to be inspired, to be connected to other people, to hear about new ideas, new projects and then they just go home and they would not stay there for work.

Very quickly, the place started to attract lots of attention. The community grown rapidly: *"It was always full, people just loved every subject we were bringing and we also started to empower people to bring some people with ideas, contents."* In 2011, the founders decided to launch an app called *Coworking Manual* to face the demands regarding the new business model and work ethics that were developing around coworking⁷. While the place was increasingly attracting speakers and entrepreneurs and receiving media attention, it still had problems to generate enough revenue. To ensure the survival of the place, the events that used to be free were gradually charged an entry fee. The rent was increased and founders started to entertain the possibility of opening multiple spaces as a way to make the company more profitable.

In 2013, Xindanwei opened a second and third space to scale the renting of the space. A few months later, the organization closed door and each of the founder were to pursue other directions. Originally interested in running creating events, they had gradually lost interest in the daily running of the spaces: *"We put our energy, 90% of our energy into maintaining the space, finding tenants and providing good service to them. But I was still not so excited about this. It was not really my business model."*, explains one of the founder.

The inability of Xindanwei to turn into a larger and profitable organization lies for a large part in the difficulty of the *"cloning of the culture"* of the original space (as by the words of one founder). Commercial viability of the organization implied the opening of multiple spaces. This transition from running event to a more real-estate-based model was not part of the original project, making these unanticipated changes difficult. Despite its shutdown in 2013, the existence of Xindanwei stands out as an important step in the development of a Shanghai-based where organizations and individuals met frequently to discuss and imagine practices, methods and discourses around collaborative work.

PEOPLE SQUARED: PROCESSES AND SYSTEMIC VIEWS ON COLLABORATIVE WORK

People Squared is a company in Shanghai that rent spaces to independent workers and small teams to work and meet with other teams, primarily in IT and high-tech sector. The space was started in 2011 in an office that was left empty, as one of the founder explains:

4. All of the data is housed on a server of the French National Research Agency (ANR) as open data. As part of the larger research project funded by the French National Research Agency (<http://www.agence-nationale-recherche.fr/?Project=ANR-13-SOIN-0006>), other 'third place' models of innovation were examined in other regions of China (Shenzhen and Nanjing) that corresponded to different socio-economic configurations.

5. The interviews in Chinese language were conducted by the DPUP of Nanjing University or by team members that speaks the language. Data were processed using the Sphinx software.

6. From the agenda on the official website, <http://xindanwei.com>, accessed 14 April 2015

7. "we struggled with our own capacity to respond to all these inquiries" from <http://xindanwei.com/lang/en/2011/09/xindanwei-developers/> accessed 14 July 2017

Our company was bought by another one. All of my team actually moved to the new company. We had the space pretty much open up and we were looking for something to do with it.

Four years later, the company had six spaces in Shanghai and two in Beijing with a total of 5000m² of office space, made of approximately 70% private offices and 30% open space offices. The two People Squared spaces we visited⁸ in the city center of Shanghai (near Jing'an Temple) are mainly used by young start-ups and entrepreneurs, most of whom work in the field of mobile applications and social networking. *"We are hosting over 130 startups and teams over the all spaces. Most of them are early-stage, some of them have raised series A, series B. [i.e. later rounds of venture capital]"* explains its founder.

People Squared's states its mission as providing optimal development conditions for young businesses by creating an adapted environment. To enforce a common culture in each of its spaces, founders has defined rules for "openness" that tenants have to follow. The service agreement states that some shared activities in the space are mandatory, like weekly morning meetings and brainstorming sessions. Multiples initiatives (newsletters, events, etc.) are offered to sustain the community of entrepreneurs both within and between its coworking spaces, but also in connection with other spaces in the city. The founder believes that coworking spaces has helped creating better relationships between entrepreneurs in Shanghai, but there still a lot of room for his company to develop:

Before, when a team comes to us, the first question they were asking was: "how much is the rent?". Now, more and more, they are asking: "what are the teams inside the space?"

At the core of its project, People Squared relies on the systematization of energies to codify a common culture of collaboration through rituals in information sharing, group thinking, and business development. Here, People Squared take a systemic view based on processes that differs from Xindanwei's objectives and approaches that were much more localized and intuitive.

XINCHEJIAN: "CREATED IN CHINA" AND THE NEW CULTURE OF CHINESE MAKERS

XinCheJian is often considered the first hackerspace in China. Created in 2011, this non-profit organization welcomes people who want to work on the creation of digital and technological objects. Part of a larger international network of hackerspaces, it tries *"to attract more people that actually do stuff, instead of sit there and talk."* as an employee who manages the place explains. Originally a small club of 'geeks' housed in the first floor of Xindanwei, this organisation has known a fast and large success in China. It has moved three times in less than five years, from an old factory, to the first floor of the office of a famous international design company, to finally a central location right in the heart of Shanghai. Today, the hackerspace XinCheJian is housed in one of People Squared's premises called Hero Center. The FAQ of Xinchejian says about this relationship: *"Xinchejian is a tenant inside the Hero Center. People Squared is Xinchejian's landlord."* The founder of People Squared explained during the visit that having a hackerspace

like Xinchejian within its space was interesting for him to generate a dynamic around new technological fields, like the Internet of Things for instance.

Less than five years after its creation, XinCheJian has become one of the nerve centres for innovation in China. Each Wednesday at 7pm, Xinchejian hosts "open nights" where everyone can present something of its choice in English or Chinese. Each talk last 9 minutes and the size of the audience vary between 30 and sometimes more than a 100 people. Presenters of any backgrounds usually take turns: technologists from important companies (Wolfram, Intel, Foxconn, etc.), academics, local designers, young students, etc. The place seeks to preserve its original mission: to welcome those who need a place to learn and turn their technological ideas into reality. XinCheJian drew on existing examples of hackerspace around the world, such as Noisebridge in San Francisco whose founder makes regular visits to China. The spaces' leaders participate in activities of the global community: international conferences, shared websites, global meetings, etc. XinCheJian even set up a "hacker passport" system with Noisebridge in San Francisco and others around the world, whereby its members could work in other participating hackerspaces.

The growing success of the place has led to a gradual rewriting of its role and mission, which has widened considerably. We found tracks of this change in positioning in the edits of Xinchejian's page for the global website *hackerspaces.org*. In 2010, XinCheJian was humbly for *"all those who are interested in understanding how things work and are happy to get their hands dirty."* At the end of 2014, the message has become more assertive: *"Our long term goal is to spread the concept and philosophy throughout China and inspire the creation of hackerspaces in every major city from the East to West."*

Indeed, this rather inconspicuous place has become emblematic of new forms of innovation in the country. The Chinese word for *maker* (*chuangke*) was first discussed and imagined in XinCheJian (Lindtner, 2012). It is now widely use in national policies and current language to describe new trends on entrepreneurship and technology in China. One of the founders of the space has become the evangelist of the Chinese maker cause. Originally from Taiwan and having lived in the United States, he works on promoting the encounter between the manufacturers, industry leaders, policy-makers and hackers from China and worldwide. The two other original founders have left the organization itself but keep coming regularly to the space. Newly created hackerspaces from Qingdao or Nanjing all claimed their affiliation to the founding team of Xinchejian.

Xinchejian claims to keep distance from sponsors and institutions, but still accept money from them. The website states: *"Xinchejian does accept money if there are no strings attached."*⁹ An employee of the space explains: *"The only thing Xinchejian can do is recognize their position as sponsors. We will put their logos at Xinchejian space and also on our social media and newsletter"*. This strong-arm approach to large companies that pays for limited visibility (the car brand Mini was a golden sponsor at the time of this article) shows the notoriety that this

8. At the time, these were the only two that existed. Since, the company has expanded and there are now several spaces.

9. From <https://wiki.xinchejian.com/wiki/FAQ>, consulted on Feb 2nd 2017

hackerspace has acquired in China and the emphasis put by its members into the preservation of an identity of the space that is not strongly affiliated to commercial activities.

In recent years, the Chinese government has also paid close attention to informal communities of technologists and 'makers' (*chuangke*). The announcement¹⁰ made in 2011 to open one hundred hackerspaces in the city of Shanghai has today been carried out (see below). In 2015, the Chinese Minister of Science and Technology visited XinCheJian¹¹ to promote the *Mass Makerspaces* national policy that place spaces for innovation at the heart of the 'Made in China 2025' industrial plan¹². The director of the Minhang Development Zone, one of the large economic zone dedicated to innovation in Shanghai, explains during a visit to XinCheJian:

*XinCheJian has succeeded in developing an entrepreneurial culture and a unique atmosphere very conducive to innovation. This place had an important impact on the industry today. It offers us a very helpful guidance and support.*¹³

The case of XinCheJian demonstrates the importance of a non-profit model sustained by members with a will to create a relatively neutral space where institutions and individuals can meet for discussion and learning. Its strong identity relies largely on the fact it belongs to the worldwide network of hackerspaces. This has helped the organization to preserve itself despite its spatial integration with larger organizations and closeness with famous brands and governmental institutions. The evolution of its discourse, positioning and status of importance in the country was also followed by multiple relocations towards central and more expensive areas of the city.

INNOVATION HOUSE: THE SHANGHAI GOVERNMENT'S RESPONSE

The Innovation Houses (社区创新屋) is an educational project created by the city of Shanghai to provide space for education based on design and making for schoolchildren and local residents. Multiple spaces have been opened throughout the city, mostly located closed to schools and within residential communities.

The city government of Shanghai is also to respond to the need for an infrastructure enabling the creative economy to pursue its expansion in the city. In 2014, the city's Science and Technology Department announced the opening of a hundred spaces, termed 'innovation houses' (*chuangxin wo*). Mainly aimed at retired people and first and second grade children, the mission of these Innovation Houses was to bring practical skills and knowledge into the Chinese school system. Located in the heart of the main residential areas of the city, the municipality wanted to promote methods, practices, and tools to help conceive a different relationship to work and production. The manager of the space in the Hongqiao neighbourhood explains:

The schools have special classes (xingquban) or courses. They come into my space to study woodworking. Every week, they come to a class for an afternoon. I am the teacher.

The physical space of this Innovation House is divided between worktables for manual activities and space for machinery, dedicated primarily to woodworking. For each area, the content sometimes differs widely depending on the team managing the premises. Operating costs (wages and maintenance) are the responsibility of the residential area. Access is free for users, who are mainly the families residing in the area, except for materials, which are paid for by the users. Some workshops charge attendance (maximum 50RMB) in order to pay the teachers. These workshops are primarily to teach children to use the machines and, in particular, to know how to transform their ideas into reality. The content of the activities is not specifically defined by any municipal or official program, but instead is, summarized in four words pinned on the wall: "I create, I design, I use my hands, I produce" (*wo chuangyi, wo sheji, wo dongshou, wo zhizuo*). "As long as the activities are related to these four words, there are no rules about the subjects for the workshops. The main thing is that everyone uses their hands," said the manager of the place. One of the objective is to bring different generations, especially elderly people, to teach some crafts to the youngest users of the space.

We met a member of the hackerspace XinCheJian comes regularly in these Innovation Houses. She founded a company that offers introductory workshops on electronics to children using open-source components. She was hired by the government to promote initiatives related to innovation in the Jingan district of Shanghai. She recalled the creation of the Innovation Houses:

About 2 years ago, the government came to XinCheJian to discuss the creation of new spaces. They wanted to build a hundred spaces. They also wanted to know the details of the construction of this type of spaces, how to ensure that they become something new, something innovative.

The Innovation Houses was the first attempt for a Chinese local government to appropriate spatial and organizational designs created by independent organizations to foster innovation via urban policies. Since then, the The Innovation Houses has since be discontinued and replaced by the local application of a vast national *Mass Makerspace* (*zhongchuang kongjian*) program aiming at creating thousands of spaces dedicated to support local innovation all over the country. At this stage, we do not know about the relationships between the Innovation Houses experiment and the national program, but it was one of the earliest local experiment in China.

10. *Chinese hackerspaces, or what happens when a government is run by engineers*, 27 November 2011, <http://hackaday.com/2011/11/27/chinese-hackerspaces-or-what-happens-when-a-government-is-run-by-engineers/>, accessed 14 April 2015.

11. "Maker Movement is getting a lot of attentions from the Chinese governments these days. China Minister of Science and Technology Wan Gang visited 新车间 [XinCheJian] on Saturday", David Li on XinCheJian's Official Facebook Page, <https://www.facebook.com/taweili/posts/10153570475541562>, accessed 14 April 2015.

12. "大力推动中小企业创业基地和创客空间发展 [we must strongly support the creation of SMEs and the development of hackerspaces]," Made in China 2025, the Pathway to Building a Strong Nation Xinhua, 15 March 2015, http://news.xinhuanet.com/comments/2015-03/23/c_1114725622.htm, accessed 14 April 2015.

13. This quote, as well as all quotes of government officials and those interviewed at the Innovation House, were originally in Mandarin Chinese and have been translated by the authors and translator.

Discussions: The Urban Assemblage of Innovation Spaces in Shanghai

The four spaces presented here are all part of the same network dynamic, despite their relatively different characteristics. Their contribution to the changes in culture around innovation in Shanghai took different forms, according to their original goals and the structure of their organizations. The XinCheJian hackerspace was born out of the creative energy of the Xindanwei coworking space, which has since closed. That hackerspace then found refuge in another coworking space, People Squared, which supports web entrepreneurs. As for the city government, it decided to create its own educational model, drawing on practices found in these spaces and finding support within these existing communities, prefiguring a large national program.

The threads that weave together the organizations in Shanghai consist of closely related groups, each occupying a specific function. Based on the data collected during our fieldwork, we singled out the most important transformations for each organizations and map them to understand how single trajectories tied together to form a larger assemblage in the city (Figure 1). We took into account 1) their spatial evolution over time, 2) their distance with each others and 3) their position in the scope upper/middle/under ground as defined by Cohendet & al (2010). By representing their changing proximity over time, we see how their different trajectories are and reconfigure the urban landscape of innovation in Shanghai. Once spatialized, power relationships in this urban assemblage appears not necessarily as antagonist forces. For the different actors, power results in their ability to first understand the overall shape of the assemblage, then reduce or increase distance with other actors to position themselves. The XinCheJian hackerspace is central and acts as a moving and opportunistic organization, linking different spaces by joining them successively. The unfolding of

these spaces relationships suggest a few ways to consider spatial transformations of organizations over time, that we call *modes of assemblage*. These *modes d'assemblage* are not exclusive and should not be seen as self-aware strategies from the actors themselves. They can be considered as partial models that help us to formalize the spatial, temporal, and organizational evolution of a network of actors of innovation at the city level, sometimes not easily observable.

RE-ASSEMBLAGE BY FRAGMENTATION: THE BANYAN TREE

Xindanwei, despite its closing, acted as an important driver in the re-assembling of Shanghai's landscape for innovation. Built around an emblematic space, it emerged from repeated events and meetings, that provided a ground for the growth of today's most important actors (like Xinchejian hackerspace). The reasons for its closing can be interpreted as not only commercial failure, but a larger transformation where its spatial anchoring disappeared, allowing multiple initiatives to scatter and become organizations of their own. One of the founder of Xindanwei described this model as the 'banyan tree' model: "While the mother tree probably already dead, the branches have become new trees.". More than a space, Xindanwei was built as a place, more exactly a place where the goal was to meet others. This organizational culture, translated by the app and design guidelines for coworking, was spread through practices. The example of Xindanwei shows how places to foster culture of collaborative work and open innovation can be conceived as ephemeral. It also shows that the profitability of the organization as a business does not reflects directly its mid or long-term value for a local community. The important contribution achieved by Xindanwei as a non-profit could not be sustained as a for-profit business.

FIGURE 1
Timeline of events and trajectories of third-spaces (Shanghai, 2010-2015)

RE-ASSEMBLAGE BY CIRCULATION: LINKING OUT AND IN

The construction of relationships at the scale of the city was made possible by the ability of Xinchajian to navigate spatially through successive relocations, and in larger local and international networks. Unlike Xindanwei who was conceived as a place, Xinchajian as an organization was conceived around a set of features common to a larger network of similar spaces (the hackerspaces): projects, workflows, weekly meetings, etc. This allows the organization to move and circulate without suffering too much from dilution of its identity through following partnerships and relocations. International relationships have largely contributed to consolidate the legitimacy and sometimes bring ideas as an inspiration. Each year, Xinchajian is part of a 'China Tour' for people from around the world who want to visit the world of Chinese electronics. Flagship events such as the Maker Carnival or TEDx also bring together people from several countries. These accesses to local and international network of connected actors allow members to keep ties with the organization during its circulation, to eventually autonomize into its own structure. These circulations of people and knowledge allow a shared set of practices to develop through multiple organizations, making collaboration easier. These common practices facilitate discussions and eventual projects between institutions like policy-makers and active organizations. Spaces acting as middleground like Xinchajian can host the training for members of individuals from institutions. Moreover, the spatial circulation of Xinchajian across organizations support this process of training by proximity.

RE-ASSEMBLAGE BY REPLICATION: "THIRD PLACES" AS A MODEL FOR LEARNING

The cases of Innovation Houses and People Squared show two different attempts to create a systematic approach to spaces that help to support innovation. One of the key elements of success lies in the ability of making available learning resources, including knowledge and know-how, not only from the managers of the spaces but by its tenants. With the Innovation Houses, the Shanghai municipality adopted the idea of the hackerspace but changed its location (extension outside the city centre and within habitation compounds) and the group targeted (families, not young technology enthusiasts), while retaining the learning model: openness and availability of materials, workshops, projects, and courses in the form of conferences. By institutionalizing these learning models, the end goal was to create a new generation of young Chinese people who will know how to think and design, how to be 'creative', and most importantly, be able to make their ideas a reality. The clear definition of an educational model requires statements under the forms of rules, codes of conduct or slogans to be enforced by space managers, like observed in People Squared or Innovation House. In many regards, Xinchajian and Xindanwei have also followed this direction. They took the role promoting a model of space as a form of education and business platform to be replicated in other cities, providing resources to do so without control on the branding. These models, originally mostly driven by discourses and ideas related to open innovation, are actualized in key locations by institutional or commercial actors, often with the goals

of bringing them closer to problematic areas, like schools for Innovation Houses. The results of the integration of non-profit models into institutional objectives remain to be seen.

Conclusion

We have presented in this paper the evolution of four organizations dedicated to innovation in the city of Shanghai during the period 2011-2015. Early experiments in coworking spaces and hackerspaces by local and international enthusiasts have provided blueprints that are now being reassembled into larger and more influential organizations by public and non-state actors. This process of reassemblage has been supported by different spatial forms that have largely contributed to reshape the urban landscape of spaces dedicated to innovation in the city. We propose three *modes of assemblage* to describe the different ways this has happened. The *scattering* where ephemeral space has given ground for a number of initiatives to grow, while itself disappearing. The *circulation* where people move between local and international organizations, and spaces relocates frequently around the city to help define common practices and discourses. The *replication* where models inspired by smaller initiatives are actualized in specific locations, often by institutions to solve societal or business issues. Each of these approaches relies on specific acceptations of what is known in the literature as open innovation, reflecting the diversity of the actual practices behind the term. These first formalizations are based on the literature and the observations made in the city of Shanghai. However, and a full assessment will require observation over a longer period of time.

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ANNEXE / TABLE 1
List of interviews

Name	Role /Activity	Organization	
Interview 1	China's maker movement and open-source advocate	Xinchejian	1h30
Interview 2	Created a fablab within the Xinchejian community	XinFab	1h +visit
Interview 3	Employee of the hackerspace	Xinchejian	1h30 +visit
Interview 4	Professor in NYU Shanghai	Hacked Matter	1h
Interview 5	Young entrepreneur from the US	Air Purifier	1h
Interview 6	CEO of a startup specialized in HR for startups	Gurudigger	1h +visit
Interview 7	Founder and CEO	People Squared	1h30 +visit
Interview 8	Manager	Xindanwei	1h30
Interview 9	CEO of Make for Kids	Make For Kids	1h30 +visit
Interview 10	Space Manager Hongqiao District	Innovation Houses	1h30 +visit
Interview 11	CTO	Bitmap3D	1h
Interview 12	CEO / Official from Shanghai government	Minhang InnoPark	1h
Interview 13	Founder	Shanghai Fablab	1h
Interview 14	Student	RaspberryPi China	1h
Interview 15	Founder and art curator	Make + / Digital Art	1h
Interview 16	Engineer	Web company	1h
Interview 17	Community Manager	DF Robot	1h
50 people	Users of the spaces	Users	1h each

ANNEXE / TABLE 2
Investigation guidelines

For each space, tasks are:

- draw a map of the space
- quick inventory of key machines / objects (with pictures if possible)
- interview of owner, manager or community manager
- ask for datasets (previous surveys, mailing lists, social media accounts, etc.)

Interview questions

THE SPACE / ORGANIZATION: the management of their organization (15 min)

- Quick story of the space
- What are the key assets that allow your space / organization to be sustainable?
- What are the most important objects of your space?
- What is the most important online tool you use? How does it contribute to running the space? Why is it so important?
- Do you know about open bill, open date, agile management...?
- THE NETWORKS: The networks of innovation in China
- What are the networks supporting your activities?
- Are there more informal or institutional? Governments?
- Which scope of those networks? International? Local? National?
- Which sort of resources do they provide? Visibility? Funding? Structure?
- How are partnerships with HK? US? EU?