The Development of Copycat Towns in China: An Analysis of Their Economic, Social, and Environmental Implications

Working Paper WP17DS1

Daniel Sui
Ohio State University

Bo Zhao
Oregon State University

Hui Kong
Ohio State University

October 2017

Abstract

The great urban leap forward in China during the past four decades has dramatically transformed the Chinese landscape across the country as well as Chinese society in many profound ways. By situating the development of xenophilic copycat towns under the broader context of China's four urban design and development motifs, this report presents an initial study of copycat/shanzhai towns in China through a mixed qualitative and quantitative approach. The qualitative data gathered through on-site interviews and observations reveal multiple unique and local circumstances for the development of these copycat towns while the quantitative analysis and mapping using big data analytics shed light for the first time on the national trend of this phenomena and its manifestations in the local real estate market. Furthermore, the way in which the development of copycat towns still follows the basic laws of supply and demand and market forces should be taken into full consideration. Most of the successful copycat towns covered in this report are either located near a large city, or have convenient transportation infrastructure that makes them accessible from nearby city centers. Violations in basic geography and economic laws have made a significant number of copycat towns into ghost towns. Compared to the conventional urban development models, copycat towns cost a lot more to build and develop, and they also tend to serve the relatively wealthy and powerful cohort of the population. Inadvertently, copycat towns in China have continued to widen the gap between the rich and poor as well as producing a huge environmental cost. This report calls for a fundamental shift in China's real estate-led urban development land policy and property taxes to ensure the next phase of urban development in China will be economically efficient, social equitable, and environmental sustainable. Moving forward, we recommend a more pragmatic approach to the copycat town development in China by digging deeper into the reasons for their successes and failures.

Keywords: copycat town, shanzhai city, urban development, China, land policy

About the Authors

Daniel Sui is an Arts and Sciences Distinguished Professor and Professor of Geography, Public Affairs, Public Health, and Urban/Regional Planning at the Ohio State University (OSU). His research current interests include ecocity and smart city development in China, location-based social media, and legal/ethical issues of using geospatial technology in society. Sui received the 2006 Michael Breheny Prize for best paper in Environment and Planning. He was also a 2009 Guggenheim Fellow and recipient of the 2014 distinguished scholar award from the Association of American Geographers (AAG). Sui was also the 2015 Public Policy Scholar in residence at the Woodrow Wilson International Center for Scholars. More information about Sui's current research and publications can be found at: https://www.researchgate.net/profile/Daniel_Sui.

Department of Geography
The Ohio State University
Columbus, OH 43210
U.S.A.
sui.10@osu.edu

Bo Zhao is an Assistant Professor of cartography and geovisual analytics at Oregon State University. His current research lies on (1) location spoofing and its social implications, 2) big geospatial data analytics, and (3) web mapping. Bo has participated in projects related to urban development, environmental protection, public opinion, and LGBT community in China. More information about Zhao's research and publications can be found at: https://www.researchgate.net/profile/Bo_Zhao66

Hui Kong is a Ph.D. student in Department of Geography at the Ohio State University (OSU), majoring in GIS and Urban Studies. Her research interests include theories of the emerging urban/city science, urban modeling /simulation, urban planning and spatial data analysis. More information about Kong's research and publications can be found at: https://www.researchgate.net/profile/Hui_Kong9

Acknowledgement

Table of Contents

List of Tables

List of Figures

The Development of Copycat Towns in China:
An Initial Analysis of Their Economic, Social, and Environmental Implications

Introduction: China's great urban leap forward

Along with the technological innovations led by the U.S., former World Bank chief economist Joseph Stiglitz (2001 Nobel Laureate in Economic Sciences) once called urbanization in China one of the two forces shaping the global economy in the 21st century (Stiglitz 2015). Indeed, the past four decades have witnessed an accelerated urbanization in China that is truly breathtaking and unprecedented in human history (Campanella 2011; Miller 2012; Ren 2013). The volume, variety, and velocity of urbanization in China are equally (if not more) astonishing than the advent of the "Big Data" avalanche. Breathtakingly, China has experienced an unprecedented great leap forward in urbanization. The growth and expansion of urban built-up areas in China throughout the last 40 years are equivalent to what the U.S. has experienced cumulatively in the past 200 years. In China, the urbanization of land is much faster than the urbanization of people, and urban development often defies the basic laws of markets and economics. As the driving engine for domestic development, urbanization has been adopted as a national development strategy in China, along with a further push for globalization as reflected in its recent "one belt and one road" strategy. China's great urban leap forward is characterized by the following key features:

- Scale/volume: massive—both horizontally and vertically; a total of 657 cities at the end of 2015; built area increased by 270 percent (between 1990–2007) and immense urban sprawl; Chinese cities are now also home to the world's top 30 skyscrapers (Work Bank 2014).
- Velocity/speed: rapid pace of development—the urban population in China grew from barely 17 percent back in 1978 to an astonishing 56 percent by the end of 2016, it is expected to reach 70 percent by 2030; 400 million have moved from the countryside to cities over the past 20 years.
- Diversity/variety: China's urbanization has exhibited great spatial (north vs. south; coastal cities vs. interior provinces) and temporal (pre- vs. post-reform period) unevenness (Wu 2016). Chinese cities are experiencing different stages of development, having diverse urban forms (high-rise skyscrapers vs. urban slumps/villages), and have taken a variety of approaches for development (hyper modern, nostalgic, western, and ecocity).
- Complexity: China's great urban leap forward defies the simplistic binary of either good or bad. The impacts of China's unprecedented urbanization are complex, ranging from the good (moving more people out of poverty with an increased access to goods and services for urban residents), to the bad (growing traffic jams, lack of quality schools and health care services), and the ugly (air pollution, ghost cities) (Guo 2015; Woodworth and Wallace 2017).

China's urban development plan is ambitious, and internationalization is not just the goal for tier-one cities in China. Among the 200 regional cities, 183 are planning to become international

metropolises. Almost all the 657 cities in China have plans to develop new cities or districts: on average, provincial capital cities are planning to build 4.6 new districts while regional cities will build 1.5 new districts. If all the new districts and cities are built as planned, they will be able to accommodate 3.4 billion people, more than 2.5 times that of China's current population. According to one recent estimate (Zhu 2017), the over-built housing in Chinese cities could easily accommodate another 300 million people—almost the entire population of the U.S.

Indeed, as the Chinese urbanization continues to accelerate, how the Chinese cities evolve will not only affect the quality of life of the Chinese people, but will also have global repercussions for people in other parts of the world. Among the diverse urban forms, one particular type has received media attention over the past two decades, namely the development of the so-called copycat ("shanzhai" in Chinese) cities in some Chinese metropolises. In nascent literature on the topic, the following terms have been used to refer to more or less the same or similar phenomena: counterfeit cities/towns, shanzhai (山寨) cities/towns, duplitecture, fake cities/towns, pastiche, architectural simulacra, and xenophilic or xenocentric cities/towns. For consistency, copycat and xenophilic towns are used in this report. In general, copycat towns refer to the design and development of a city (or part of a city) per those developed in the West broadly and Europe/North America in particular. Copycat towns usually start with the construction of landmark foreign buildings (e.g. Eiffel Tower, St. Mark's Square, etc.), followed by the naming and design of subdivisions borrowed from foreign countries (Napa Valley, Venice Water Town, Château Maisons-Laffitte, etc.), and eventually even constructing a replica of an entire town or city in the West. For example, a replica of the Austrian town, Hallstatt, was built in Huizhou, Guangdong; Chengdu has built Dorchester, a British town; Amsterdam was reconstructed in Shenyang, etc. According to Bosker (2013a), hundreds of "theme park" suburbs—meticulously reconstructed versions of the most iconic cities of the West—now "constitute an archipelago of the alien 'other' within the geographically and historically integrated, coherently 'Chinese' urban habitat." Yet, this important type of development in Chinese cities has not received the kind attention it deserves by the research and policy community.

Research goals and objectives

Although the phenomenon of copycat towns in China is not new and its origin can be traced back as early as the Qin Dynasty (Bosker 2013a), its phenomenal growth during the past two decades is breath-taking and alarming. Commentaries and criticisms about this phenomenon have been made on an ad hoc basis in recent years, but as of today, there still exist no systematic studies of copycat towns in China at the national level. Due to the potential social, economic, as well as environmental impacts, the development of copycat towns in China deserves serious attention by both scholars and policy makers. The goal of this report aims to fill the gap in the literature by conducting a critical analysis of the copycat town phenomenon in China. More specifically, this reports tries to shed light on the following three questions:

- What is the geographical distribution of copycat towns at both inter- and intra- urban levels in China?

- What are the social, economic, cultural, and environmental impacts of copycat towns in China?

- What policy initiatives should be implemented to guide the development of copycat towns in China?

Structure of this report

The rest of this report is organized as follows: the next section situates the development of copycat cities and xenophilic design in the broader context of three additional urban design approaches in China. Details of the mixed methodology used in this report are described in the third section. The fourth section presents the results and discusses the social, economic, and environmental implications of copycat towns in China. The last section contains a summary and concluding remarks as well as a call for future research.

<div align="center">

Research background: Four motifs in recent Chinese urban design

</div>

To better understand this unique urban design practice and its consequent urban forms and processes, the development of copycat towns is contextualized in the broader context of urban design and development practices during the past four decades. Researchers, planners, and policy makers in China have explored a variety of approaches aiming to set the massive Chinese urbanization on the right course. If we were to create a taxonomy of the approaches, they range from memes of "the livable city," to "the garden/green city," "the sponge city," and on to "the mobile/connected/unblocked city," "the healthy city," "the smart city," "the historical city," "the happy city," "the safe city", and "the resilient city." In reviewing the vast literature on Chinese urban design and development strategies (as well as the author's own observation in the multiple cities he visited while conducting the field work for this project), these diverse urban design approaches in China are grouped into the following four general motifs during China's post-reform era (after 1978): nostalgic, ecological, xenophilic, and hyper-modern design. These four varieties have emerged as interconnected yet distinct design practices for guiding China's urban development during the past four decades and for the years to come.

The nostalgic motif: In pursuit of "gu" [复古/怀旧派]

The nostalgic motif of urban design is driven by historical romanticism. Its design is motivated by a specific urban form of the past (e.g. garden city or the traditional Chinese housing such as SiHeYuan in Beijing, or the Tang style in Qujiang, Xian), which is often sensitive historical and geographical context (Fig. 1). Its goal is to stimulate urban residents to travel back in time and relive the happy time of yesteryear. In practice, this design motif is often coupled with projects of historical preservation and restoration, particularly in places or sites of historical significance that are in need of major architectural restoration. The development of the Taipingqiao district in Shanghai and the historical areas along the Beijing central axes are examples of this kind of development motif. Alternatively, new development areas can be constructed from scratch following the nostalgic design motif, such as the historical retail street in Wuhan and Xian. With

the growing popularity of courtyard (SiHeyYuan) in Beijing, multiple suites of courtyard apartments are even built on the roof of hypermodern buildings (e.g. PanGuDaQuan in Beijing). Because of the requirement of special materials and design considerations, the nostalgic motif of development can be very costly if built strictly per the architectural requirements of these historical buildings. Therefore, with the exceptions of the retail and tourist sites, the common beneficiaries of the nostalgic urban design are the wealthy. Due to these factors, the design method is not necessarily very efficient nor is it environmentally friendly.

Figure 1: Nostalgic design in ShaanXi: In pursuit of "gu"

The ecological motif: In pursuit of "tu" [归土/田园派]

The ecological motif is driven by ecological romanticism. Its design is motivated by the strong desire to be in harmony with nature (Fig. 2). Its goal is a green, low-carbon life style that moves the population toward more sustainable development and lifestyles. In practice, the ecological approach builds on the traditional Chinese belief in the unity of man with nature, follows the tradition of "design with nature", and seeks a harmony of urban development with the surrounding environment and landscape (www.turenscape.com). The work by Kongjian Yu exemplifies the ecological motif, which is not only reflected in the multiple design projects he and his colleagues have completed across China, but also in his prolific publications. His design firm is named <u>Turen</u> (which in Chinese is "土人"). 土("Tu") in Chinese has multiple meanings, including: earth, countryside, rural, native, authentic. Yu's pursuit of "Tu"/ 土 is clearly reflected in his writings and talks on big foot aesthetics, negative planning, the art of survival, and the sponge city (Yu et al. 2011; Yu 2012).

Figure 2: Ecocity development in Zhejiang: In pursuit of "tu"

The ecological approach as practiced by Kongjian Yu and his colleagues via negative planning in China has received accolades world-wide. However, some have challenged the feasibility of Yu's minimal intervention approach to planning Chinese cities. The design ideas he advocates for are intuitive and artistic, most of which have not been rigorously tested from scientific or engineering perspectives. Many find this lack of strong empirical evidence to support the goals it is designed to achieve to be problematic. Bucolic hedonism may be encouraged by ecological design. Worst of all, green or ecocity design (without sound scientific and engineering support) may be sold to local governments and communities with disastrous environmental consequences, such as the failed project at Dongtan by Arup.

The xenophilic motif: In pursuit of "yang" [崇洋/仿外派]

The xenophilic motif is driven by geographical romanticism. Its design is motivated by the love of urban forms in faraway practices. Its goal is for the local residents to live in parallel with those in the Western developed world (Fig. 3a). In practice, copycat towns usually start with the construction of a landmark mimicking a foreign building (e.g., the Eiffel Tower or St. Mark's Square). This is followed by subdivisions with names and designs borrowed from foreign countries (e.g., Napa Valley, Venice Water Town, and Château Maisons-Laffitte). Occasionally a copycat town even replicates an entire western town or city. A replica of the Austrian town Hallstatt was built in Huizhou, Guangdong, for instance. Chengdu has incorporated a copy of the British town Dorchester. Shenyang includes elements of Amsterdam, and on and on. Where the driving metaphor behind the ecological motif is the sponge, these copycat towns instead draw upon so-called "duplitecture" and pastiche. Instead of pursuing "gu" or "tu," developers of these copycat towns relentlessly chase the "yang," seeking to make Chinese cities mimic their Western counterparts both in terms of architecture and lifestyle, as exhibited in the Venice Garden subdivisions across China (Fig. 3b). The "yang" in this report refers to the Chinese character 洋, not the same character as Yin & Yang (阳). The "yang" in this paper (洋) literally means "overseas", "foreign," "non-native," etc. Because of this new wave of xenophilic obsession with

duplitecture, an increasing number of Chinese cities are now filled with English estates, French Chateaus, Dutch townhouses, German Villas, and Italian Piazzas.

Figure 3a: Xenophilic design: In pursuit of "yang"

Figure 3b: Xenophilic design: In pursuit of "yang"
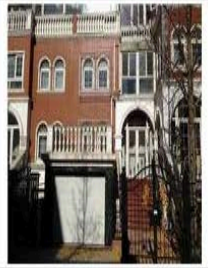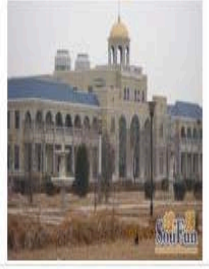
The hyper-modern motif: In pursuit of "qi"/"xin" [猎奇/求新派]

Similar but distinct from the previous three, the hyper-modern motif, is driven by innovation romanticism. Its design is motivated by the love of urban forms that are creative and futuristic (Fig. 4). In practice, hyper-modern urban design is often developed by leading architects, and its building forms are often shockingly different from anything urban residents are familiar with. Many hyper-modern development projects are designed by internationally renowned architects such as British architect Zaha Hadid (Soho Galaxy in Beijing), French architect Paul Andreu (The National Center for Performing Arts in Beijing), or the Dutch architect Rem Koolhaas (The CCTV headquarter building). According to Wikipedia, hyper-modernism regards the form (attribute) of an object as having no context distinct from its function. Attributes can include shapes, colors, ratios, and even time. Unlike postmodernism and modernism, hyper-modernism exists in an era of fault-tolerant technological change and treats extraneous attributes (most conspicuously physical form) as discordant with function. While modernism and post-modernism debate the value of the "box" or absolute reference point, hyper-modernism focuses on improvising attributes of the box (reference point now an extraneous value rather than correct or incorrect value) so that all of its attributes are non-extraneous; it also excises attributes that are extraneous. Furthermore, hyper-modernism stipulates a world in which the object has been replaced by the attributes of the object. The new attribute-driven world is driven by the rise of technology and aspires to a convergence between technology and biology and more importantly information and matter. Hyper-modernism finds its validation in emphasis on the value of new technology to overcome natural limitations and emphasizes a dismissal of an object-driven past in favor of a flexible, attribute-driven heuristic. Indeed, traveling through major cities in China these days, one can easily catch a glimpse of these hyper-modern development projects full of futuristic buildings.

Figure 4: Hypermodern design—In pursuit of "xin"/"qi"

As China's urbanization is expected to continue at an accelerating pace in the coming decade, a critical account of all these four approaches is crucial to create urban development policies that ensure economic efficiency, social equity, and environmental sustainability. Under the backdrop of these four urban design motifs, this report will try to answer the three questions raised in the prior section by conducting an in-depth analysis of the xenophilic motif using a mixed method of qualitative and quantitative approaches, and the results will be discussed in the context of these four motifs and China's urban great leap forward.

Data and Methodology

To answer these three questions, an approach of mixed methods is undertaken by combining both quantitative and qualitative analysis. Stakeholder interviews and site visits have been conducted in representative cities across the urban hierarchy (1st, 2nd, and 3rd tier cities) in China. Quantitative analysis is based upon real estate development and sale data harvested from SouFun.com, Anjuke.com, and other sources from both the central and local government agencies. Relying on big data analytics, the data harvested from SouFun.com and other sources is geocoded and spatial analyses are conducted using two primary software tools: ArcGIS and Geo-Da.

Data

The data used for the copycat town analysis is harvested from Soufun.com—one of China's largest real estate websites (Fig. 5a and 5b). To collect all the foreign-name communities over the country, a custom designed web crawler was developed for data collection (Fig. 6). To begin with, we identified the URL of the overview page (http://soufun.com/ SoufunFamily.htm). In this overview page, it shows a list of cities that have Soufun service (i.e., each city on the list has at least one property that has its web profile on Soufun.com). Since each city on the list attached a URL to its corresponding city web page, the crawler can iterate through a module that visits each URL of the listed cities.

Figure 5a: Data Source

English	Chinese
Lowest Price 5500 Yuan per Sqrt Meter	低价 5500 元/平方米
Average Price 6000 Yuan per Sqrt Meter	均价 6000 元/平方米
7528 Yuan per Sqrt Meter	7528 元/平方米
Lowest Price 6,000 thousand Yuan Per house/apartment	低价 600 万元/套
Average Price 4,570 thousand Yuan Per house/apartment	均价 457 万元/套
TBD	价格待定

Source: SouFun.com

Page 11

Figure 5b: Data Source

name	address	price	developer	lat	lng	f. name	snd_adm	fst_adm
北部万科城	清远广清高速龙塘出口右转 3 公里	5500	清远市宏美投资有限公司	23.634	113.052	No	清远市	广东省

Source: SouFun.com

Figure 6: Data harvesting work-flow
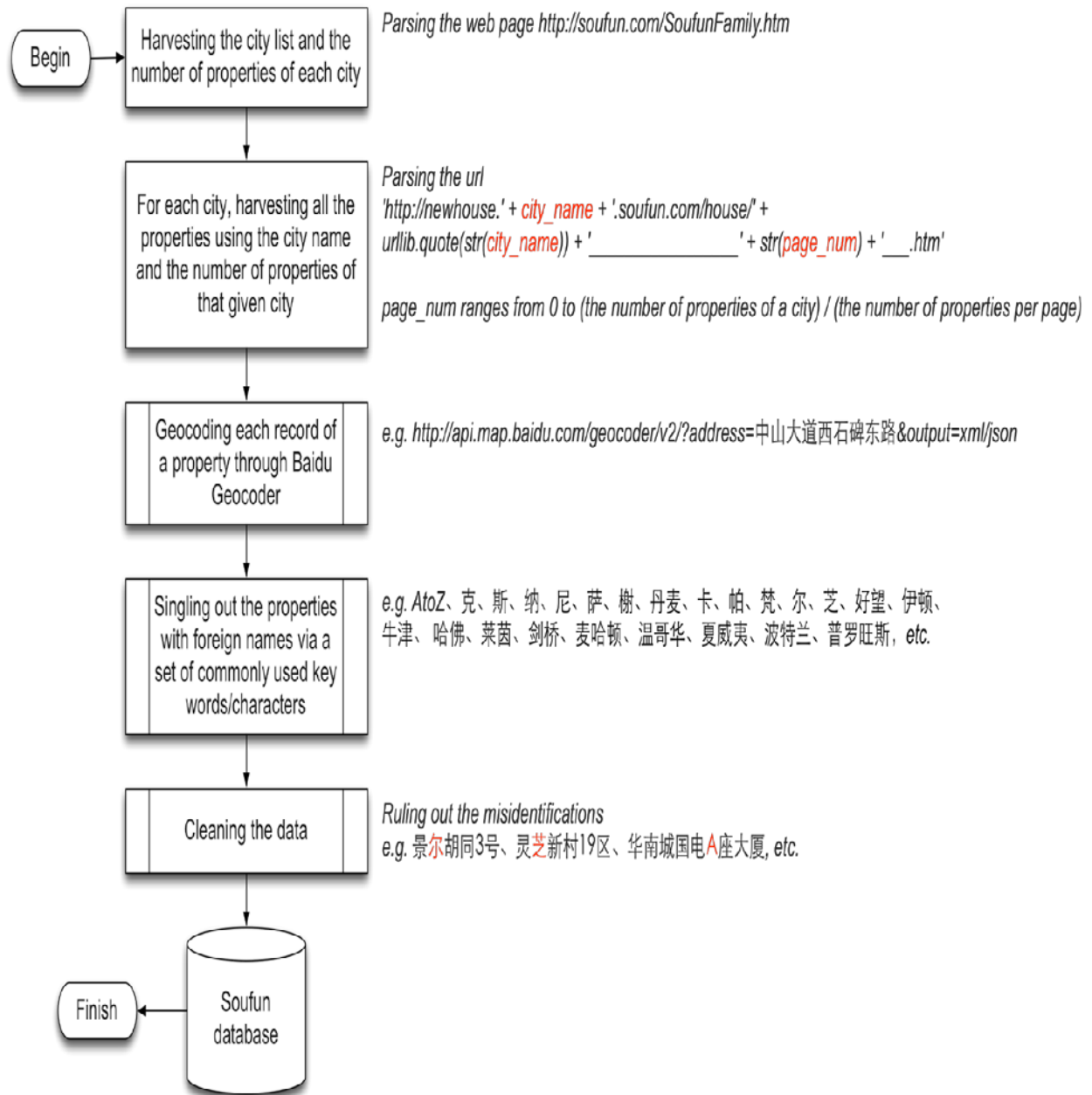
For each city, Soufun normally hosts more than one real estate property. To provide a better browsing experience, Soufun divides the real estate items of a city into several pages. Each page only displays a limited number (e.g., 10, 20, 50, etc.) of real estate entities. So, to harvest all items, the crawler must sift through page by page. For each page, the URL structure is structured as below:

http://newhouse%s.soufun.com/house/%s%d___.htm' %
(city_name, urllib.quote(city_name), page_num)

Here, *%s* denotes a textual variable, the *%d* denotes an integer variable, '*city_name*' indicates the pinyin format of the city name, and '*page_num*' contains the specific page number. By visiting the pages, the crawler has enabled us to harvest all properties listed in Soufun for a city. Once the iteration of all cities visited is completed, a data set of all the real estate properties over the country with the defined feature (i.e. with foreign names in our case) is harvested.

Since most of the real estate records in the data set contained an address, this attribute enables the researchers to geocode each real estate through Baidu geocoder API. For example, by sending a URL request with an address parameter to Baidu geocoder server as below:

http://api.map.baidu.com/geocoder/v2/?address=广州市天河区华颖花园&output=json

We can therefore acquire the coordinate pair of the requested address (23.1215546, 113.3541426).

Next, we single out the real estate property with foreign names via a set of commonly used foreign keywords/characters. Based on our observation, the foreign names usually contain some feature keywords or characters, such as alphabetic letters, '克', '斯', '纳', '尼', '萨', '卡', '帕', '梵', '尔', '莱茵' (Rhine), '哈佛' (Harvard), '剑桥' (Cambridge), '麦哈顿' (Manhattan), '温哥华' (Vancouver), '波特兰' (Portland), '普罗旺斯' (Provence), etc. Thus, by using the feature keywords/characters as a filter, we can single out a set of candidate properties with a foreign name.

Prior to storing the candidates to the final database, manual checks are conducted to remove the positive false items. For example, although some of the identified real estates (e.g., '景尔胡同 3 号', '灵芝新村 19 区', '华南国电 A 座大厦', etc.) are with a feature character "尔", they are not communities with a foreign name.

In sum, the proposed web crawler enables one to efficiently harvest communities with a foreign name. The authors have harvested a total of 204,496 real estate properties with foreign names. After the data is harvested, we then conduct further spatial analysis and mapping using ArcGIS.

Mixed method approach

To compare the communities with a foreign-name to those who do not, the authors attempt to examine their selling price within a spatial context. Due to the complexity of the real estate market, it is impossible to directly compare two properties—the price of properties is influenced by many factors, such as floor-area ratio (FAR—the ratio of a house's gross floor area to the area of the land upon which the house of a given community was built), size, location, style, etc. To control the impact of different factors, especially the location, we only compare the housing price with the neighboring ones. Specifically, we compare the price of a foreign-name to those communities within one kilometer and **built after 2000**, and then map out those foreign-name properties as points.

In addition to the exploration above, we would also try to understand the foreign-name community, based on photos extracted from Anjuke.com. By linking the architecture style with the name, we may find how other properties of the locale were spoofed. For example, does the architecture style of Portland Garden look like a garden in Portland? Has the Cambridge community been influenced by Cambridge, UK?

Housing price refers to the average price of one square meter of the floor size which is widely used in the real estate market in urban China. The most frequent method used in house price studies is the Hedonic price method (HPM) (Li and Brown 1980; Malpezzi 2001; Tse 2002). The HPM is a well-established indirect valuation technique based on the idea that consumer goods, in this case, dwellings, are not homogenous goods; they differ with respect to a variety of characteristics (Rosen 1974). These characters might include several dimensions: dwelling attributes (age and housing style), geographic location attributes (distance to city center), and neighborhood attributes (the greening rate, Floor area ratio, number of units). Logit Linear regression of the Hedonic model is employed to model the housing price (cf., Hu et al. 2015), and the equation is as follows:

$$P = F(C1, C2, \ldots, Ci, Cj)$$

$$\text{In} P = a0 + \sum ai * \text{In} Ci + \sum aj * Cj + \varepsilon$$

Where,
    P is the housing price of the real estate;
    C_i is the character of the real estate, evaluated by continuous variables;
    C_j is the character of the real estate, evaluated by dummy variables;
    a_i and a_j are the coefficients of the characters;
    a_0 is a constant;
    ε is the error;
    …

The independent variables (Ci and Cj) refer to some of the defining characteristics of housing communities, including the age of the real-estate communities, the greening rate, the floor area ratio, and the geographic location (distance to Tiananmen square), and whether the community has a foreign name (it is a dummy variable: 0–no; 1–yes).

Age of real-estate property is calculated by using the date the real estate was built. As our research focuses on the commercial market housing, only real estate after the housing reform in 1998 have been considered, while the danwei housing built before the reform and the old historic dwellings are excluded.

Floor area ratio (FAR) is the ratio of a building's total floor area (gross floor area) to the size of the piece of land upon which it is built. The term can also refer to limits imposed on such a ratio. As a formula: Floor area ratio = (total covered area on all floors of all buildings on a certain plot, gross floor area) / (area of the plot). FAR can be used in zoning to limit the number of people

that a building can hold, rather than controlling a building's external shape. In sum, this variable can show the strength of the construction development.

The geographic location is evaluated by two dimensions: first, the location in the city—the distance from the geographic location of the real estate to Tiananmen square. Second, the location in the district—the distance from the geographic location of the real estate to the center of the neighborhood.

Results and Discussions

This section first presents the results of the qualitative analysis based upon the data we gathered and the field work conducted, followed by a quantitative analysis.

Results of qualitative analysis and field work

This section provides a summary of some Western-style copycat towns in China. They were developed through different mechanisms, ranging from private development to complex public-private partnerships. Some of the copycat towns have been relatively successful regarding their targeted functions, while others can be considered total failures and have even become ghost towns (Shepard 2015).

Tianducheng in Hangzhou

Tianducheng in Hangzhou is an example of an unsuccessful copycat town in China (Fig. 7). This town was planned as the 'greatest satellite city' in China. The developer planned to construct a new French-style city for around 10,000 inhabitants. A model of the Eiffel Tower, one-third the height of the original in Paris, was built as the landmark of Tianducheng. Nearly all buildings in the town are French-style. However, due to a variety of factors, this 'plan to make a new city' failed; the current population in Tianducheng is estimated to be only around 2,000, most of whom work at a nearby French-themed amusement park. Tianducheng has become a 'ghost city'.

Several reasons led to the failure of Tianducheng. Firstly, Tianducheng is located not only very far away from the Hangzhou city center, but also far away from major highways and railroads, making transportation and therefore ability to access to the city inconvenient (Fig. 7). During the field work for this project, I visited the city in the summer of 2016, and it took me about 2 hours by public transit from Hangzhou Rail Station to get to Tianducheng. Another dynamic that led to the failure of this copycat town is the cost to build a completely new western-style city is extremely high, and the construction company could not afford the further development several years after the construction began. They were only able to complete half of the originally planned project due to the discontinuation of funding. This lack of substantial investment also results in insufficient infrastructure within the town. Consequently, the town fails to provide the promised essential living facilities for its residents. Additionally, the town doesn't provide adequate public services to its residents. The lack of services also lowers the quality of life for residents. Tianducheng has now become only a backdrop for wedding photography for

newlyweds who want to take photos with French-style landscape as backgrounds; the substantive potential of this place is never realized.

Figure 7: Location and Transportation Conditions of Tianducheng in Hangzhou

Copycat towns in Shanghai

The several copycat towns in Shanghai were constructed under the strategy of 'One City and Nine Towns'. The 'one city' is Songjiang City, and the nine towns include Anting, Gaoqiao, Pujiang, Luodian, Fengjing, Zhoupu, Fengcheng, Chenjiazhen, and Zhujiajiao (Fig. 8). Per this plan (Xue and Zhou 2007), Shanghai aimed to build distinctively western-style towns to promote Shanghai's cosmopolitan image on the global stage, and to hopefully attract residents from the central city to the satellite towns to ease the population burden in the traditional Shanghai city proper. However, based upon the recent reports and our field observation, most towns failed to attract the type of residents they hoped for, and quite a few of them have become "ghost cities."

Figure 8: Location of Thames Town in Shanghai

Table 1: 'One City and Nine Towns' in Shanghai

Towns	Building Style	Construction Details	Current status (as of summer 2016)
Songjiang	British Style (Thames Town)	Insufficient shopping facilities	Ghost city
Anting	German Style	Inadequate transportation infrastructure to make it accessible from the Shanghai city center and other towns	Isolated from central city; ghost city
Gaoqiao	Dutch Style	Only symbolic landmark buildings	Ghost city
Pujiang	Italian Style	Most buildings are Chinese styles	Ghost city
Luodian	Swedish Style	Failed to consider Chinese 'Feng Shui' customs for buildings	Ghost city
Fengjing	Canadian Style	Most buildings are Chinese styles	Ghost city
Zhoupu	Conventional	Constructed according to the conventional approach	Under rapid development
Fengcheng	Spanish Style	Only symbolic landmark type buildings	Ghost city
Chenjiazhen	Eco-city	Constructed according to ecological design principles	Still under construction
Zhujiajiao	Chinese Style	Constructed as a Southern China (Jiangnan-style) Watertown	Successfully constructed

Source: http://shanghaisquared.com/2011/02/08/shape-of-the-city-thames-town/

Jackson Hole in Suburban Beijing

Jackson Hole subdivision is a commercially successful example of a copycat town in China (Fig. 9). This town is in the Yanqing District of Beijing and is very close to some major tourist sites such as Guanting Reservoir, the Great Wall, Yudu Mountain, and one of the largest entertainment centers (Teton Village). Though located far away from the center of Beijing, this town is near the G110 highway, which connects directly to the city center. This location makes Jackson Hole a good place for both tourism and weekend getaways from the city proper.

Figure 9: Location of Jackson Hole in Beijing
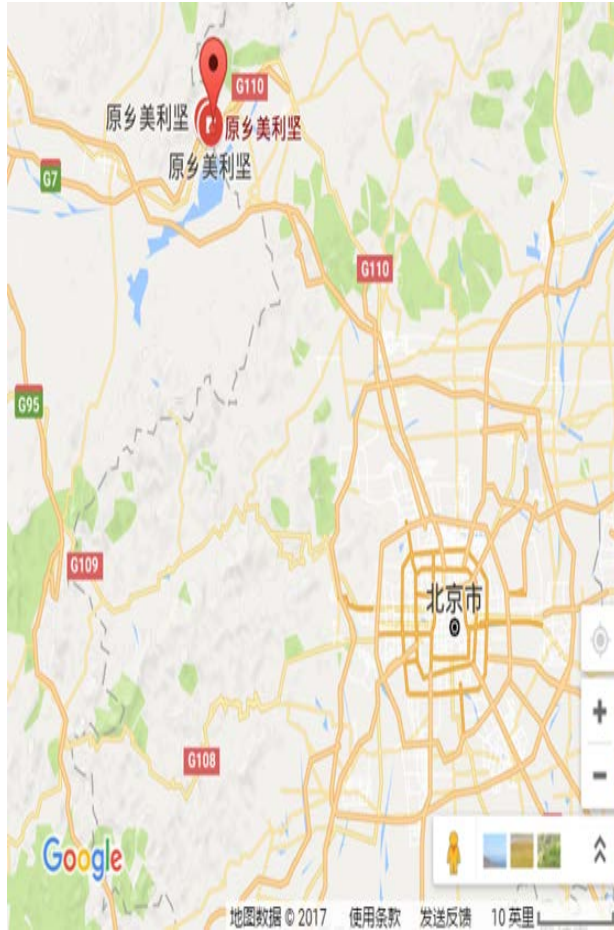
Both the buildings and layout of Jackson Hole mimic the style of Western American cities. Elements like cowboys, churches, clubs, and western restaurants can be seen everywhere, and many road names even depict North American icons and symbols, such as Aspen, Moose, and Route 66. Unlike the other western-style towns, Jackson Hole is targeting upper class and elite clientele. The average housing price in the town starts around $625,000, and some of the higher end options are listed as high as $8 million. Not surprisingly, the environmental amenity and luxury buildings in the town have attracted many wealthy buyers, and as of summer 2016, more than 90 percent of houses have sold (http://cn.nytimes.com/china/20151210/c10jacksonhole/). The town is now a wealthy community with almost full occupancy. Besides the American craftsman style homes, residents in the town are also emulating other aspects of an American lifestyle. For example, some residents go to churches on weekends, join the golf club, and occasionally have parties with their neighbors. Quite a few residents in Jackson Hole actually own apartments or condominiums in the inner city of Beijing and only come to spend their weekend and enjoy an American lifestyle in Jackson Hole.

Tianjin's new Manhattan Project

Approximately 50 kilometers east of downtown Tianjin, the Binhai New District was formed in 2009 after merging three smaller districts. In the commercial core of the Binhai New District, the city of Tianjin aims to build a copycat town of Manhattan (Fig. 10). So far, this is the largest copycat town built for commercial use, targeting advanced service companies in FIRE (Finance, Insurance, and Real Estate) industries. The first phase of construction started near Xiangluowan, and a total of 39 projects to build 48 skyscrapers was planned back in 2007. As of summer 2015, only 13 out of the 39 planned projects (a total of 17 buildings) were completed; they were, however, still unoccupied. Most of these planned skyscrapers (emulating the style of Manhattan in NYC) were left unfinished due to the lack of further funding. As reported by journalists from major news agencies around China, Tianjin's Binhai New District has been a ghost town since the summer of 2015.

Figure 10: Location of the New Manhattan in Binhai New District in Tianjin
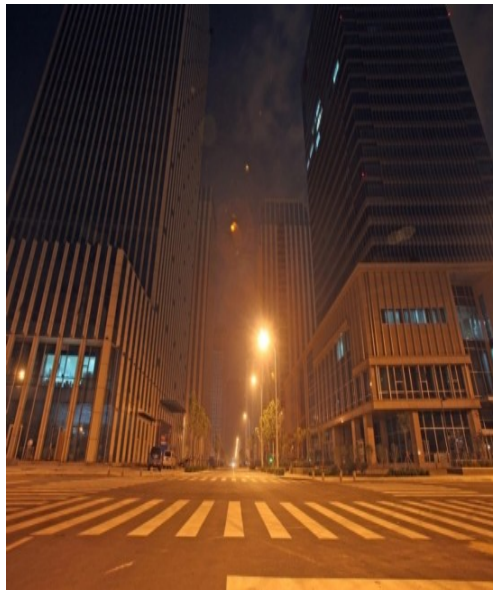
As an integral part of the Jing-Jin-Ji megalopolis surrounding Bo Hai, Tianjin's Binhai New District has great potential for future growth. With the completion of a high-speed train,Tanggu station, and Beijing's second International airport near Daxing, as well as the many tax incentives and perks given to the Binhai New District as a free trade zone, some experts argue that the current setback of Binhai New District's growth is only temporary. There are only signs in 2017 that some of the projects are slowly resuming construction, but whether it will become the third pole of growth and China's new financial center remains to be seen. The most optimistic prediction is that it will take at least another 10 years for the 39 projects to have reasonable occupancy.

<u>Huizhou's Hallstatt</u>

Located 150 kilometers east of Guangzhou, a copycat Austrian town, Hallstatt, was built near Huizhou (Fig. 11). Financed by the Minmetals Corporation with a total investment of $940 million, this Austrian copycat town is unique and different from other copycat projects in China in the sense that developers tried to duplicate an entire town to excruciating details. Hallstatt is a world heritage city designated by UNESCO. Primarily built as a major tourist attraction, the developer's goal was to let visitors experience Austria without leaving China. Although it is still too early to assess whether the original goal was accomplished, tourists to Austria's real Hallstatt have increased dramatically in recent years.

Figure 11: Hallstatt Austrian Town in Huizhou, Guangdong

Results of quantitative analysis

Using data harvested from SouFun.com (a major online portal for real estate information in China), we are able to gain a glimpse of this phenomenon at the national and city level. First, the foreign cities Chinese developers aim to emulate seem to cluster around European and North American cities (Fig. 12). In particular, the naming seems to have a strong preference in using European place names, e.g., 莱茵 (Rheine, Germany/West Europe), 香榭丽舍 (Champs-Élysées, France), 威尼斯 (Venice, Italy), 奥林匹克 (Olympic, Greece), 塞纳 (Seine, France), 牛津 (Oxford, England), 维也纳 (Vienna, Austria), 托斯卡纳 (Toscana, Italy), 伊顿 (Eton, England), and 摩卡 (Mocha, Italy). The only American place name that is on the top 10 list is 夏威夷 (Hawaii, U.S.). Second, the sale prices for housing in those subdivisions with foreign names do seem to be higher than those divisions with traditional Chinese names. According to our tabulation using data harvested from SouFun.com, at the national level (Fig. 13), 56.36 percent of properties with foreign names have higher prices than their neighbor with conventional Chinese

names. At the municipality level, including Beijing and some provincial capitals (e.g. Guangzhou, Wuhan, Nanchang, Changsha), most properties with foreign names have higher sales prices than those with traditional Chinese names.

Figure 12: Word Cloud of Copycat Subdivisions using Foreign Names in China

Comparing the housing price of copycat communities with other real estate in the vicinity (buffer of 200m, 500m, 1000m, 5000m) (Price minus the average price of non-copycat communities in the buffer), the former is significantly higher than the latter by the results of paired-sample t-test shown in table 2. It statistically suggests that the housing price of copycat communities might be higher.

Figure 13: Price of copycat properties with foreign names

For each property of this sort, comparing the price
with the average price of its neighbor properties

· Price higher than the average price of neighbor properties
· Price lower than the average price of neighbor properties

Using 1km buffer to
search neighbor properties.

1 km

碧信波水多庄园

时代YOU公寓

保利北
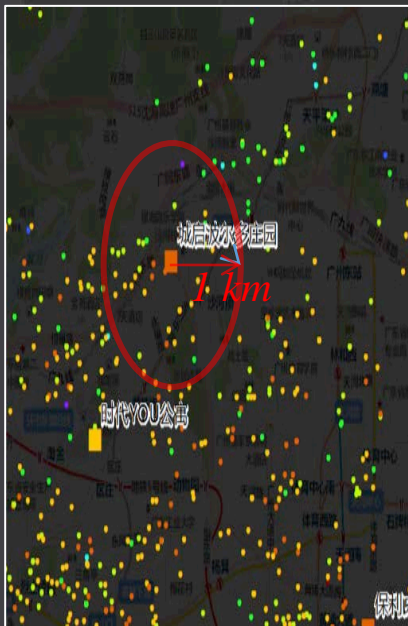
* This map is drawn by 700 random properties with
foreign names.

Table 2: Paired-sample t-test of price difference

Paired Differences		Mean	Std. Deviation	95% Confidence Interval of the Difference		t	Sig. (2-tailed)
				Lower	Upper		
Pair 1	price - avg_price_200	11592.163	26155.831	9353.897	13830.429	10.174	.000
Pair 2	price - avg_price_500	5636.233	19704.545	3950.030	7322.435	6.566	.000
Pair 3	price - avg_price_1000	4811.527	17745.572	3292.963	6330.092	6.224	.000
Pair 4	price - avg_price_5000	3439.184	17511.449	1940.654	4937.714	4.509	.000

Source: Calculated by Zhao and Huang

Of course, the paired-sample t-test has not taken account of other housing characteristics of communities. We then input other characteristics in the Hedonic model. Logit linear regression on housing price, in model one the set of independent variables include age, green ratio, floor area ratio, and distance to city center, excluding 'foreign names', while model two takes account of these variables. All mentioned independent variables are statistically significant in these two models, and there is not significant co-relation between independent variables (the value of VIF is less than five). The Adjusted R square of model one equals 0.438, and this statistic of model two is 0.440, which means that the independent variable 'foreign names' contribute to the explanation of the dependent variable 'housing price'.

Table 3: Logit linear regression on housing price

Dependent variable: In(price)	Model one			Model two		
	B	**Beta**	**VIF**	**B**	**Beta**	**VIF**
In(distance to city center)	-0.506***	-0.564	1.282	-0.504***	-0.562	1.286
In(age of community)	0.194***	0.189	1.169	0.196***	0.191	1.174
In(green ratio)	0.069*	0.027	1.113	0.069*	0.027	1.113
In(floor area ratio)	0.047**	0.041	1.417	0.044**	0.039	1.421
having more than 1,000 units (dummy)	-0.046**	-0.029	1.065	-0.046**	-0.029	1.065
parking rate is higher than 1 (dummy)	0.038*	0.024	1.045	0.039*	0.024	1.045
villa-style dwelling (dummy)	0.057	0.020	1.348	0.050	0.018	1.352
foreign-name community (dummy)				0.070**	0.034	1.012
constant	14.752			14.718		
Adjusted R square	0.438			0.440		
Significance levels: *p <= 0.10; **p <= 0.05; ***p <=0.01.						

Source: Calculated by Zhao and Huang

The effect of age is significantly positive, which means that after the year 2000, older housing communities have a higher price than newly-built housing communities. The reason is that the public facilities of older housing property (kindergarten, primary school, neighborhood shopping center, public transportation, etc.) are relatively better, compared to the facilities of new housing property.

Higher green ratio plays a positive role in predicting a higher price. This is expected, as real estate with a better green environment is more attractive and thereby would yield a higher price.

The floor area ratio plays a positive role in predicting a higher price. The housing neighborhood with a higher floor area ratio has more high-rise buildings, which increase the average cost per square meters of the construction. Compared to the apartment in the multi-layer buildings, each square meter of the floor size in the apartment in the high-rise buildings is more expensive.

The distance to the city center (Tiananmen square) is a negative predictor to housing price. It is consistent with existing studies as Beijing is a typical monocentric urban structure, and the housing price decreases as the distance to Tiananmen square increases. That is consistent with the previous research (e.g., Liu 2015).

The construction style of the dwelling (whether it is a detached villa or apartment) is not statistically significant. This is because of compounded reasons. Firstly, the villa-style unit might be more expensive than the apartment-style unit, as its yard needs to be accounted; and secondly, the construction of high-rise apartment buildings would also have a high cost with regards to public facilities (such as the elevators), and that would transfer into part of the housing price of apartment-style units. Without the consideration of the size of the yard or the number of floors of the apartment-style units, it is hard to say which construction style is more expensive.

The availability of parking sites is statistically positive. That is understandable that along with the increase of private automobile ownership in Beijing, people emphasize the parking sites in the neighborhood. If the community has ample parking, the housing price would be relatively high.

Being a large community (more than 1,000 units) is statistically negative to predict a higher average housing price. A large community is usually aiming at middle- or lower-middle class households, so its market housing price is relatively low. Although the profit of each unit is limited, its huge size could guarantee the developer's gains.

Controlling other independent variables, the results show that compared to communities without a foreign name, having a foreign name is more likely to predict a higher housing price. That further consolidates our hypothesis. The logic behind this is that, from the supply side, in view of that motive, the real-estate developer also tends to create the sense of place to attract buyers. Living in neighborhoods with a foreign name and western-style of architecture is a symbolic sign of decent, elegant middle-income class—and of course, it is reasonable to raise the housing price (meet the needs); from the demand side, the customers are willing to pay more to enjoy the spoofed 'meaning of place'—international modern style, elegant, and fashionable, against the context of globalization.

Discussions

The development of copycat cities has been relentlessly pursuing consistency with foreign culture as its goal is to make Chinese cities conform to cities in the West both in terms of architecture and lifestyle. The phenomenon of copycat cities in China is certainly not new, neither is it necessarily confined to China. In fact, its origin can be traced back as early as the Qin Dynasty (221–206 BCE) (Bosker 2013a), when replicas of the six small kingdoms united by the Qin Dynasty were built by the emperor in front of his palace. The city of Las Vegas in the U.S. is also full of copycat cities with replications of architectural and cultural icons from all over the world. However, the explosive growth of copycat cities within China during the past two decades is breath-taking and alarming.

There are economic, political as well as deep cultural reasons for the continuing growth of copycat cities in China (Bosker 2013b; Schwartz 2013). Economically, developers of these copycat cities in China are certainly profit-driven as most of these real estate development projects are marketed to the affluent and elite in Chinese society. The initiative of building copycat towns, such as Tianducheng, is to boost GDP of the local government. By means of constructing western-style towns, the government wishes to attract residents to maximize the

profit of land that is relatively further away from central city. In addition, some western-style towns were constructed to attract tourists and thus to promote the development of tourism and bring about profits to related stakeholders.

The political characteristics of China also contribute to the construction of copycat towns. Authorities, especially the top leaders in local government, always have powerful control over the urban planning, land development, and city construction. Also, the assessment of achievements of government leaders matters a lot with regards to their political career. Under this backdrop, government leaders are often in favor of the massive construction of 'beautiful' and 'higher-level' towns, buildings, and landmarks. Some even pursue the 'image project', which refers to constructions that are flashy and superficially magnificent but not practical or pragmatic. The copycat western-style towns thus satisfy the pursuit of government leaders. And as the leaders have powerful voices within the realms of urban planning and policy making, the design of western-style towns can often be approved and put into practice. Some copycat towns are also constructed as a response to certain policies in a certain period. For example, the 'one city and nine towns' in Shanghai were constructed as policy makers tried to attract the population in the central city to satellite towns with the western styles, and they wanted to construct towns with distinctive styles and avoid the 'same images of all cities' that were criticized heavily at the time.

Culturally, these copycat towns serve as surrogates for the middle or upper class to realize their Chinese dream (Ren 2011). Living in these western-style homes gives residents an enormous sense of pride. In many ways, copycat cities not only reveal China's strong desire to connect with the outside world after decades of isolation, but they also exhibit a sense of owning and conquering the world (Morris 2013), indeed echoing the same sentiment during the early Qin Dynasty more than 2000 years ago. People feel mysteriously empowered to live or conduct business in their own White House—the most frequently copied building in China. Moreover, the lag of China to the West during 19th–20th century brings about a psychological gap to Western cultures for many Chinese people. Many Chinese people are less confident in Chinese traditional culture and tend to make up for this gap by latching onto western-style things, ranging from bags or clothes from western brands to buildings or cities. People tend to consider everything with western-style better than the traditional Chinese ones, and tend to have a sense of superiority when living in western-style buildings. All of this makes sense due to Chinese culture's fundamentally different views on copying, imitation, and mimicry (Bosker 2013). Unlike in Western culture, the Chinese place equal, if not more value, on the copy of an object as they do on the original. Mainstream Chinese culture considers mimicry a form of mastery; imitation is encouraged as an integral part of the training for craftsmanship in China's education.

Members of the Chinese public seem to love copycat cities, but reactions from the research and professional community have been decidedly mixed, leaning more toward the negative. There are dismal failures for some copycat cities. They failed to achieve their planned functions, and eventually become 'ghost cities'. Quite a few of them have simply become the backdrop for photography, film, and TV production because of their western-style buildings. This happens in a lot of the copycat towns in China. Also, some projects in copycat towns were stopped halfway during the construction, such as the Manhattan Town in Tianjin, due to the lack of funding to support further construction. Besides, most construction of copycat towns results in the

destruction of natural landscape. The landscape in these towns are neither western nor Chinese, but a disordered mix of the two cultures.

The new Manhattan project in Tianjin, which has quickly turned into a ghost city, is just one of the many ghost cities identified using Baidu search engine data (Chi et al. 2015), which are mostly validated by the recent findings from remote sensing data (Zheng et al. 2017). The social, economic, and environmental costs for building copycat cities also tend to be high. For example, the design of Venice Water Town near Hangzhou is inspired by Italy's floating city (Fig. 14). The pink, orange, and beige townhouses, with windows all framed by ogee arches and balconies framed by white balustrades, overlook bridges and cobblestones streets. Gondolas are a common sight in the canals running through Venice Water Town. At first glance, the copycat town has striking similarities with the real Venice in terms of architecture and landscape. However, upon closer examination, it is apparent that the canal in Venice Water Town is man-made. Designing and developing copycat cities like Venice Town Water costs more energy and materials than townhouse development projects following traditional design. At Beijing's Palais de Fortune, two hundred chateaus sit behind gold-tipped fences. At Chengdu's British Town, pitched roofs and cast-iron street lamps dot the streets. At Shanghai's Thames Town, a Gothic cathedral has become a tourist attraction itself. These copycat structures in general cost more to build, and only the rich can afford to live in copycat cities, as many of them are gated communities with restricted access (Pow 2009). Residential copycat cities have often segregated themselves from other cities by the addition of security cameras, guards, and gates. Consequently, there is a social cost besides the environmental one, which further perpetuates the divide between the haves and have-nots in China.

Figure 14: Venice water town near Hangzhou

There are multiple reasons for the failed copycat projects. From a geographic perspective, there are four reasons to account for the failure of some of the copycat towns' disastrous failures.

First, the construction of a copycat town, especially those targeting large-scale construction (e.g., Tianducheng), requires a large amount of land. Therefore, these towns must be located relatively far away from the city center, as the land in the city is too expensive and too scarce to support the construction of a large western-style town. Thus, many copycat towns are isolated from the central city due to the distance as well as an inconvenient transport system. These dynamics do not have enough external push for development and are unlikely to attract residents.

Second, the construction of a western-style town is very costly. Some landmarks need to be built, and nearly all buildings in the area are completely rebuilt. Usually after the construction of the town, developers can no longer afford the construction of infrastructure and other facilities. Lack of infrastructure is very common in copycat towns, making residents' life very inconvenient. This is another reason why most copycat towns fail to attract enough residents.

Third, western buildings have very different structure and cultural background compared to Chinese buildings. Most western buildings do not have the same principles of 'Feng Shui' as Chinese buildings. For example, the buildings of Sweden-style in Luodian, near Shanghai, were designed as west-east exposure, which violates the north-south exposure of houses according to Chinese Feng Shui. When such a situation occurs, there are usually two consequences. In some towns, the developers refuse to make any adjustment, and few residents would like to move to the houses there. In some other cases, such as the Luodian example, developers compromise with their potential customers, and reconstruct some buildings. The combination of this constant construction and fractured structural styles does not enable communities to grow and meld.

Fourth, it is relatively easy to imitate building styles, but the culture and lifestyle prove to be more difficult. Most copycat towns only have the superficial mimicry of the western-style. The lack of western culture only makes the western buildings look incompatible with Chinese lifestyles. Jackson Hole in Beijing succeeds as the residents there are living an American lifestyle. However, it is hard for most copycat towns to achieve this.

Despite the dismal failures of some copycat cites, it should be pointed out that not all copycat cities are disastrous; there are also successful stories. Some copycat towns have become attractive tourist sites (e.g., Interlaken Town in Shenzhen), some function as a major shopping mall (e.g., Florence Town in Tianjin), and some are successful in attracting residents and become vital communities (e.g., Jackson Hole in Beijing, Portofino in Shenzhen). I visited the subdivision of Portofino in Shenzhen in December 2015. This is a copycat town that is designed and developed to imitate the real Portofino—a fishing village on the Italian Riviera coastline, southeast of Genoa. The Portofino subdivision in Shenzhen has become one of the most attractive residential areas in the city, socially integrated and environmentally pleasing with steadily growing housing prices. Besides Portofino, another copycat town in Eastern Shenzhen is Interlaken, which can also be cited a successful adventure. This town is designed as a theme park for ecological tourism, with designs inspired by the Swiss town, Interlaken. It is a fully functional city in the conventional sense—there are five-star hotels, golf courses, Spa centers, a steam-engine train, and western-style shopping malls. Interlaken has become a major tourist site

for Shenzhen. As Shenkar (2010) so convincingly argued, imitation is sometimes a necessary step toward innovation in the business world. Perhaps in the field of urban design and planning, imitation by developing copycat cities may also serve as the first step toward a more innovative urban development. Through mimicry may come mastery. China's developers seem to believe that they can advance more quickly by imitation than they can by direct innovation. This begs further interdisciplinary study of those complex phenomena.

Summary, Conclusions, and Future work

Summary

The great urban leap forward in China during the past four decades has dramatically transformed the Chinese landscape across the country as well as Chinese society in many profound ways. By situating the development of xenophilic copycat towns under the broader context of China's four urban design and development motifs, this report has presented an initial study of copycat towns in China through a mixed qualitative and quantitative approach. Table 4 summarizes the defining characteristics of these four approaches. These four motifs follow different planning philosophies, aesthetics, metaphors, and cultural motifs. They also serve different populations, and their resiliency and public perception vary as well. All four approaches will continue to have followers in the future and be practiced in designing future Chinese cities to accommodate the growing urban population, especially in China's recent push to develop small cities with special characteristics. This working paper covers only one approach. Due to the complexity of this subject matter, a mixed method approach serves the purpose of this study well. The qualitative data gathered through on-site interviews and observations revealed uniqueness and many local circumstances for the development of these copycat towns, while the quantitative analysis and mapping using big data analytics shed light for the first time on the national trend of this phenomena.

Table 4: Four dominant motifs in recent Chinese urban design

	Nostalgic	Ecological	Xenophilic	Hyper-modern
The two approaches	*Historical/ retrogressive* "古" "旧"	*Ecological/green* "土" "绿"	*Western/foreign* "洋" "外"	*Novel/innovative* "奇" "新"
Approach for planning	*Historical preservation*	*Negative planning*	*Traditional planning*	*Progressive*
Aesthetics	*Small feet, authentic/fake*	*Big feet, authentic*	*Small feet, fake*	*Small feet, futuristic/ imaginative*
Driving metaphor	*Garden*	*Sponge*	*Pastiche*	*Mixed/Misc.*
Population served	*Diverse*	*The masses/ diversity*	*The elite/wealthy*	*Upper class/elite*
Cultural motif	*Following the past*	*Following nature*	*Following the West*	*Following the new*
Cost	*Medium to high*	*Moderate (mostly sustainable)*	*High (mostly unsustainable)*	*High*
Resiliency	*Resilient*	*Resilient*	*Non-resilient*	*Unknown*
Vacancy/usage	*Low vacancy*	*low vacancy*	*high vacancy (ghost city)*	*Mixed*
Public perception	*Positive/ progressive*	*Positive/ progressive*	*Negative/ regressive*	*Mixed*

Conclusions

Based upon the empirical results of both qualitative and quantitative analysis, the following conclusions can be drawn:

First, regarding urban development in China, location is still of paramount importance. A town at a good location can often attract many residents, industries, commercial opportunities, and investment, regardless of whether it is designed/planned as a nostalgic, ecological, or xenophilic city. Most of the successful copycat towns covered in this report are either located near a large city, or have convenient transportation infrastructure that makes it accessible from the city

center. For example, Portofino in Shenzhen is located inside the city and Florence in Tianjin is very close to the city center. Jackson Hole in Beijing is near the highway that goes directly to the city center. The Swiss town, Interlaken, in Shenzhen may be an exception, but since it is designed mainly as a tourist attraction, the convenience of location is not as important.

Second, the development of copycat towns still follows the basic laws of supply and demand; market forces should be taken into full consideration. This is the major problem of most copycat towns in China—they were built in pursuit of cultural superiority or political pride, but developers ignored or were misinformed about the market laws. They failed to conduct market analysis and identify their potential customers and their needs. For example, the copycat towns that are located far away from the city center should not be developed as residential areas for middle-class families.

Third, as stated by Kevin Lynch in "The Image of the City," there are five elements to form the image of a city (edge, path, district, node, and landmark), and they need to be organized to achieve a good city form and a good environmental image (Lynch 1960). In the construction of most copycat towns, developers only 'move' some landmarks into the city, which is far from sufficient to form a complete image of the western city they try to copy. For example, although developers have moved the Eiffel Tower, Arc de Triomphe, and other French-style buildings to Tianducheng, most streets and roads are still Chinese style (e.g., with Chinese restaurants on the street). This results in the fragmentation of a city image.

Finally, the development of copycat towns is one of the four design motifs that developers and local governments used as a shrewd marketing strategy to sell real estate in China, which contributed to enormous oversupply of housing and office buildings and the inevitable ghost city phenomena. Housing prices in subdivisions named after foreign places do tend to be higher. To resolve these problems in the long run, the Chinese government must start initiating serious reforms to move away from land-based finance for local governments (Hsing 2010; Lin 2014). Local governments tend to get 55 to 80 percent of revenue from their land sale, which is analogous to pawning one's most valuable jewelry to pay bills.

This report presents preliminary results on the social, economic, and environmental impacts of copycat towns in China. Compared to the conventional urban development models, copycat towns cost a lot more to build and develop, and they also tend to serve the relatively wealthy and powerful cohort of the population. Inadvertently, copycat towns in China have continued to widen the gap between the rich and poor with a huge environmental cost as well. These copycat towns have not only paid a high social cost by further separating the rich from the poor but have also contributed to a growing environmental cost through a massively wasteful consumption of materials and energy. This report calls for a fundamental change of China's real estate-led urban development, land policy, and property taxes to ensure the next phase of urban development in China is economically efficient, social equitable, and environmental sustainable. Moving forward, we recommend a more pragmatic approach: on the one hand, blindly worshipping Western cities (the moon outside China is brighter) should be discouraged. On the other hand, it is also counterproductive to forbid the copycat town development all together, as the recently proposed development regulations in Henan province have indicated. China's market is diverse and complex, we strongly believe that a pluralist approach can better meet the growing diverse

local needs and markets in China. Rather than simply dismissing copycat towns, we need to acknowledge both their successes and failures and take a more pragmatic approach to facilitate their more healthier and sustainable development in the future.

Future Work

At the end of 2016, China's urbanization level has reached a historic high of around 56 percent. In the next decade, China's urbanization is expected to accelerate. Also, considering the fact that the government has lifted the one child policy since early 2015, China's population in general and urban population in particular can be expected to continue to rise in the coming decade. How to keep China's urban development on a healthy track—economically efficient, socially equitable, and environmentally sustainable—remains a daunting challenge along multiple fronts. Indeed, whatever happens to China's urbanization will have global repercussions on the world economy and the future of the environment.

In China's relentless pursuit of the market-driven economy with Chinese characteristics, a green city/ecocity can sell as well as a fake Piazza San Marco, along with nostalgic historical towns, or hyper-modern, futuristic, gigantic weird buildings. Obviously, there are intensive needs to further test and fine-tune all four design approaches as discussed in this paper in the spirit of linking the normative (design) with the positive (scientific) traditions articulated in the new science of cities (Batty 2013). By doing so, we surely will move beyond simplistic characterization of these four approaches as either good or bad. Instead, we should take a holistic approach to rigorously test the social equity, economic appeal, environmental performance, and health implications of these diverse urban development approaches. Only then may we develop a sensible, practical, and feasible approach to design future Chinese cities to better fulfill the Chinese dream.

Urban development as a strategy remains a topic of further investigation. One size doesn't fit all and a pluralistic approach is needed with detailed market and affordability analysis. Instead of planning relentless growth, it is time to restore urban planning back to its original primary mission—planning for control of the unintended negative, undesirable consequences of traffic congestion, growing social divide, and environmental degradation. China's recent push to put more emphasis on developing small towns with special characteristics (特色小镇) is an encouraging step toward a more sustainable urban future in China. Interestingly, the development of characteristics of towns so far has followed one or a combination of more than two of the design motifs reviewed in this report. However, it is still too early to tell whether these design approaches will ensure the healthy development of these small towns with special characteristics. Further research is needed to explore the optimal development strategy for cities of different sizes and development histories. With the aggressive implementation of the "belt and road" strategy and the designation of Xiongan near Beijing as the new development district in China, it can be expected a more programmatic and versatile urban design and development strategy can and should serve the best interest of the Chinese people.

References

Batty, M. 2013. The New Science of Cities. Cambridge, MA: MIT Press.

Bosker, B. 2013a. Original Copies: Architectural Mimicry in Contemporary China. Honululu, HI: University of Hawaii Press.

Bosker, B. 2013b. McMaoMansions: California Dreamin' in China. Available on-line at: http://blogs.kcrw.com/dna/mcmaomansions-california-dreamin-in-china (last accessed 11/01/2016).

Buleziuk, A. 2014. 'Duplitecture' vs. Pastiche: The Notion of Plagiarism in China's Postmodern Architecture. Available on-line at: http://plasticwoodmetal.blogspot.com/2014/07/duplitecture-notion-of-pastiche-in.html (last accessed 02/28/2016).

Campanella, T.J. 2011. The Concrete Dragon: China Urban Revolution and What It Means for the World. New York, NY: Princeton Architecture Press.

Chi, G., Y. Liu, Z. Wu, and H. Wu. 2015. Ghost Cities Analysis Based on Positioning Data in China. Available on-line: http://arxiv.org/abs/1510.08505 (last accessed 3/1/2016)

China Urban Land Price Dynamic Monitor. 2015. Datum land price. Retrieved from: http://www.landvalue.com.cn/L_LandPriceMonitor.aspx?Menu_ID=17&PID=9

Guo, R. 2015. New 'ghost cities' typify out-of-control planning." Chinadialog. October 15. https://www.chinadialogue.net/article/show/single/en/8239-New-ghost-cities-typify-o ut-of-control-planning

Hsing, Y. 2010. The Great Urban Transformation: Politics of Land and Property in China. New York: Oxford University Press.

Lin, G. C. S. 2014. China's landed urbanization: Neoliberalizing politics, land commodification, and municipal finance in the growth of metropolises. Environment and Planning A 46:1814–35

Liu, X., Y. Song, K. Wu, J. Wang, D. Li, and Y. Long. 2015. Understanding urban China with open data. Cities 47: 53–61.

Lynch, K. 1960. The Image of the City. Cambridge, MA: The MIT Press.

Miller, T. 2012. China's Urban Billion: The Story behind the Biggest Migration in Human History. London, Zed Books.

Morris, R. 2013. Why China Loves to Build Copycat Towns. Available on-line: http://www.bbc.com/news/magazine-23067082 (last accessed 1/22/2016).

Osnos, E. 2015. Age of Ambition: Chasing Fortune, Truth, and Faith in the New China. New York, NY: Farrar, Straus and Giroux.

Pow, C.P. 2009. Gated Communities in China: Class, Privilege and the Moral politics of the Good Life. London and New York: Routledge.

Quigley, J. 1999. Real Estate Prices and Economic Cycles. International Real Estate Review 2, 1–20.

Quigley, J. M. 2001. Real Estate and the Asian Crisis. Journal of Housing Economics 10, 129–161.

Ren, X.F. 2011. Building Globalization: Transnational Architecture Production in Urban China. Chicago. University of Chicago Press.

Ren, X.F. 2012. 'Green' as spectacle in China, Journal of International Affairs, Issue 65: 19–30.

Ren, X.F. 2013. Urban China. Cambridge: Polity Press.

Ren, X.F. 2017. "Biggest infrastructure bubble ever? City and nation building with debt-financed megaprojects in China," in The Oxford Handbook of Megaproject Management, edited by B. Flyvbjerg, p.139–153, Oxford: Oxford University Press.

Renaud, B. 2000. How Real Estate Contributed to the Thailand Financial Crisis. In Asia's Financial Crisis and the Role of Real Estate, ed. K. Mera and B. Renaud. New York, NY: M.E. Sharpe.

Saunders, W. 2012. Designed Ecologies: The Landscape Architecture of Kongjian Yu. Birkhäuser, Switzerland: Birkhäuser Architecture Press.

Schwartz, H. 2013. The Culture of the Copy: Striking Likenesses, Unreasonable Facsimiles (revised and updated edition Edition). New York, NY.: Zone Books.

Shen, J. and F. L. Wu. 2012. The development of master-planned communities in Chinese suburbs: A case study of Shanghai's Thames Town. Urban Geography 33 (2): 183–203

Shenkar, O. 2010. Copycats: How Smart Companies Use Imitation to Gain a Strategic Edge. Boston, MA: Harvard Business Review Press.

Shepard, W. 2015. Ghost Cities of China: The Story of Cities without People in the World's Most Populated Country. London, Zed Books.

Stiglitz, J.E. 2015. Reflections on China's 13th Five Year Plan. Available on-line at: https://www8.gsb.columbia.edu/faculty/jstiglitz/sites/jstiglitz/files/Reflections%20on%20China%E2%80%99s%2013th%20Five%20Year%20Plan.pdf (last accessed 1/22/2017).

Tao, R., F. B. Su, M. X. Liu, and G. Z. Cao. 2010. Land leasing and local public finance in China's regional development: Evidence from prefecture-level cities. Urban Studies 47 (10): 2217–36.

Tao, R., F. B. Su, M. X. Liu, and G. Z. Cao. 2010. Land leasing and local public finance in China's regional development: Evidence from prefecture-level cities. Urban Studies 47 (10): 2217–36.

The Economist. 2014. Special Report: China—The City As Pastiche: Dreaming Spires (April 18). Available on-line http://www.economist.com/news/special-report/21600800-shanghai-suburb-forever-england-dreaming-spire (last accessed 02/14/2016).

Tian, L. 2008. The Chengzhongcun land market in China: Boon or bane? A perspective on property rights. International Journal of Urban and Regional Research 32 (2): 282–304

Tsui, K. and Y. Wang. 2004. Between separate stoves and a single menu: Fiscal decentralization in China. The China Quarterly 177:71–90

World Bank. 2014. Urban China: Toward Efficient, Inclusive, and Sustainable Urbanization. Washington, DC: World Bank. Available on-line at: https://openknowledge.worldbank.org/handle/10986/18865 (License: CC BY 3.0 IGO, last accessed 11/15/2016).

Woodworth, M.D. and J. L. Wallace. 2017. Seeing Ghosts: Parsing China's "ghost city" controversy. Urban Geography, first published on-line, http://dx.doi.org/10.1080/02723638.2017.1288009

Wu, F. 2016. Emerging Chinese cities: Implications for global urban studies. The Professional Geographer, 68(2), 338–348. doi:10.1080/00330124.2015.1099189

Wu, J., J. Gyourko, and D. Yongheng. 2012. Evaluating conditions in major Chinese housing markets. Regional Science and Urban Economics 42(3): 531–543.

Xue, C. Q. L. and Zhou, M. 2007. Importation and adaptation: Building "One City and Nine Towns" in Shanghai: A case study of Vittorio Gregotti's plan of Pujiang Town. Urban Design International 12: 21–40.

Yu, K. 2012. The Beautiful Big-Foot: Toward a New Landscape Aesthetic. ARCADE 30.2 Available on-line: http://arcadenw.org/article/the-beautiful-big-foot

Yu, K., S. Wang, and D. Li. 2011. The negative approach to urban growth planning of Beijing, China, Journal of Environmental Planning and Management, Volume 54, Issue 9, 2011, pages 1209–1236

Zheng, Q.M., Y. Zeng, J.S. Deng, and Z.R. Ye. 2017. "Ghost cities" identification using multi-source remote sensing datasets: A case study in Yangtze River Delta. Applied Geography 80: 112–12