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Wu, Q, Edensor, T and Cheng, J (2018) Beyond Space: Spatial (Re)production and Middle Class Remaking Driven by Jiaoyufication in Nanjing City, China. *International Journal of Urban and Regional Research*, 42 (1). pp. 1-19. ISSN 0309-1317

DOI: <https://doi.org/10.1111/1468-2427.12568>

Publisher: Wiley

Version: Accepted Version

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Beyond Space: Spatial (Re)production and Middle Class Remaking Driven by *Jiaoyufication* in Nanjing City, China

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ABSTRACT

As an extension of gentrification, high quality education-driven jiaoyufication not only displaces previous lower class as jiaoyufiers, but also replaces former jiaoyufiers with newcomers, as well as blenching former blue collar neighborhoods. New middle class communities are emerging as spatially limited education-apartment zones attract social groups who attempt to occupy these spaces to facilitate social mobility and consolidation, causing tension between them. Consequently, jiaoyufication has narrowed down opportunities for intra-generation-based social mobility and exacerbated social polarization, gradually replacing traditional social hierarchies with an intergeneration-based neoliberal stratification.

Keywords: *Jiaoyufication; Space Reproduction; Cultural Reproduction; Class Remaking; Nanjing*

Introduction

Unprecedented rapid neoliberal urbanization in the China reform era has stimulated a series of substantive and complicated social, economic and spatial transitions. Among them, the form of gentrification - what Smith (2002: 427) articulates as a 'sporadic, quaint and local anomaly' – has taken on unique forms within a particular strategy of capitalist production-based, revanchist urbanization. *Jiaoyufication*, originating from the Chinese word of 'Jiaoyu',

translated as 'education' in English, reflects a newly constructed space in Chinese cities (refer to Wu et al., 2016a; Wu et al., 2016b for detailed explanation). 'Jiaoyu' refers mainly to primary and secondary schools in this paper. More specifically, *jiaoyufication* centres upon the acquisition of apartments within the urban catchment areas of prestigious primary and secondary schools. When jiaoyufiers, who demand high-quality educational resources move into these inner city areas, they not only displace the lower class (Newman and Wyly, 2006; Forrest, 2015) but also replace the former jiaoyufiers (Wu et al., 2016b). This inner city gentrification transition process has been a primarily market-driven force in contrast to state-dominated urban redevelopment through a process of formalization (Wu, 2016). Consequently, new middle class communities emerge through the (re)production of social space (Lefebvre, 1991). As with conventional processes of gentrification, these spaces foster middle class spaces and identities through *jiaoyufication*-based *cultural (re)production* (Willis, 1981; Wu et al., 2016a). As an extension of gentrification, the process of *jiaoyufication* is characterized by middle class strategies to claim educational advantages (Wu et al, 2014). As an education-led, social capital-based form of gentrification distinct from the property-led gentrification that has been used as an urban strategy of Chinese neoliberal urbanization (Wu, 2016a), *jiaoyufication* introduces educational/social capital into the kind of economy-based gentrification process theorized by Smith (Wu et al., 2016b).

In the context of *jiaoyufication*, there has been an evolving strategic 'battle' over space as part of the process of middle class remaking. Social tension suffused the social-spatial relationships between classes as they fought for high quality educational resources during the initial stages of China's urban restructuring. This has subsequently led to further contestation around social consolidation and class mobility. On one hand, in order to be close to the upper class and maintain their status (Wilson and Schulz, 1978), jiaoyufiers, as members of the urban middle class, seek to demonstrate their superiority through cultural reproduction and distinguishing themselves from other social classes. On the other hand, members of the lower-middle class are eager to challenge the existent social-hierarchy and penetrate the higher echelons of the middle class. In this sense, the lower-middle class is a 'sandwich' stratum that seeks to maintain social position while looking for ways to attain higher status. In a reformed, (post)industrialized China, limited high quality educational resources offered by the most prestigious schools have become a pivotal focus in the battle for increasing social mobility and class consolidation for middle and lower social groups (Breen and Karlson, 2014; Magnani and Zhu, 2015).

The battle over cultural reproduction has been further intensified by *jiaoyufication* in a geographical sense, extending privilege-based socio-economic competition to particular spaces (Lefebvre, 1991). As Wu et al (2015)

articulate, *jiaoyufication* refers to an interweaving process in which lower class residents are displaced by middle class *jiaoyufiers* and in the resultant urban enclaves, these pioneers have been replaced by peer successors. *Jiaoyufication* is thus a transitional process from gentrification to residential segregation that is not subject to reversal. Both high-quality educational resources and residential properties within *jiaoyufication* zones are limited. Accordingly, middle class anxiety about the loss of social status (Ehrenreich, 1990) generates an intensified battle over limited educational resources and scarce spatial resources. This is resulting in an emergent form of spatial distinction that signifies a change from differentiation based on privileged-based education to territorially-based distinction (McDowell et al., 2006; Wu et al., 2015; Soja, 1996), exacerbating social segregation.

These tensions over social and spatial (re)production have amplified intense competitions between the urban new rich (Li, 2003; Wu et al., 2014), the traditional middle class and upper fractions of the blue collar class (Wilson and Schulz, 1978). Among these contenders, the urban new rich who have emerged in the reform era are most eager to become assimilated into middle or upper strata. This distinctive class, who possessed less cultural capital in the pre-reform era, have benefited from a great increase in economic capital in the era of market reform.

In further exploring these forms of class remaking and contestation, the remainder of this paper consists of four sections. The first reviews the literature on *jiaoyufication* and draws implications about China's urban developments. The second section discusses how in-depth interviews have been utilized to illustrate how class struggle is embedded in the practice of *jiaoyufication*. By revisiting the existing literature and evaluating empirical findings, the third section elaborates upon how limited access to scarce educational resources provokes strategies to seek social mobility and status consolidation that intensify class relations. The final section elucidates upon the implications of revealing a new form of social-spatial segregation within a revanchist urbanism in China.

Understanding *Jiaoyufication* within the context of space and cultural (re)production

Initially, conceptions of gentrification accounted for the process through which older residential buildings in inner-city communities were rehabilitated and working-class occupants displaced by richer middle-class incomers (Hamnett, 1991). However, as Smith (1996) contends, gentrification more broadly refers to the (middle) class remaking of urban (and rural) spaces, a process through which its forms mutate according to the spatio-temporal contexts in which they occur. Subsequently, research has increasingly reflected the acceleration and diversification of urban restructuring, as well as the increasing size and diversity

of middle classes around the world. Accordingly, an understanding of what constitutes gentrification has expanded to encompass broader processes through which former residents are displaced, class conversion within neighborhoods occurs, properties are upgraded, and rent gaps are exploited for profit making purposes (Lees et al., 2008).

A diverse range of educational and cultural theories have endeavored to explicate these urban transformations of class and space. In drawing on Bourdieu's (1984) theories of distinction, Bridge (2001) points out that gentrification exemplifies strategies of social and cultural reproduction through the performance of a middle class habitus in redeveloped areas of the inner city. Home-making, design, cultural and consumption oriented practices reproduce both place and class. As such, these gentrified communities thereby delineate and reproduce daily urban practices that undergird structuralized rules and resources (Giddens, 1984). They can be considered as forms of cultural (re)production that contribute to social reproduction and act to sanctify these communities as sites of middle class remaking that also reproduce social space (Smith, 1996; Lefebvre, 1991).

In China, children can enroll at a nearly public school to receive a nine-year compulsory education (from primary to junior secondary school), based on the *hukou* registration that is linked with the property of their parents. This institution was enacted to ensure the fairness of education. However, the quality of educational resources between regions has been spatially differentiated (for instance, between rural and urban, or coastal and inland realms) and locations (city centre and urban fringe) (Hannum and Wang, 2006). Subsequently, students have been allowed to enroll in a better school in another district by paying a school choice fee (Tsang, 2000; Whitty, 1997). This policy has stimulated the formation of *Xuequ* buildings (Figure 1), which are located within the catchment area of key schools. This process is called *jiaoyufication* (Wu et al., 2015; Wu et al., 2014).

Since the early 2000s, as a recent extension of education-led gentrification manifest in Chinese inner cities, *jiaoyufication* has revealed the colonization of school catchment areas by the professional and managerial classes. Through such strategies, middle class families try to achieve upward mobility and cultural (re)production by securing limited housing located in key school catchment areas. This represents two threads: space making and class making (Smith, 1986).

The first thread is that *Jiaoyufication* has generated and enhanced residential segregation through distinguishing key edu-apartment communities from other neighborhoods (Wu et al., 2015; Rowe, 2014). During the initial stages of

Jiaoyufication, this inevitably displaced low class inhabitants (Rose, 2013), primarily the blue-collar workers of former state-owned (SOEs) and collective-owner enterprises (COEs) in the planned economy era (Wu and Webster, 2010). Accordingly, the coexistence of different social groups within the catchments of prestigious schools has gradually been replaced by internal middle class homogeneity (McDowell et al., 2006). Because the initial displacement of lower class residents in these edu-apartments has been supplanted by the replacement of jiaoyufiers with newcomers of a similar class, *Jiaoyufication* demonstrates unique characteristics of reversal neighborhood filter, contrasting with situations in which upwardly mobile residents depart an inner-city neighbourhood and leave poorer neighbours behind, thereby degrading the status and quality of the area (Hedin et al., 2012). Instead, segregation is produced through the prevention of lower class people from returning to the areas (Fig 1. For instance, Wu et al. (2016a) reveals that through *jiaoyufication* processes in the inner city of Nanjing, wealthy jiaoyufied families displaced the original lower class families in key schools' catchment areas and acted as the door-keepers of the housing market in resisting lower class penetration, consequently reinforcing residential segregation.

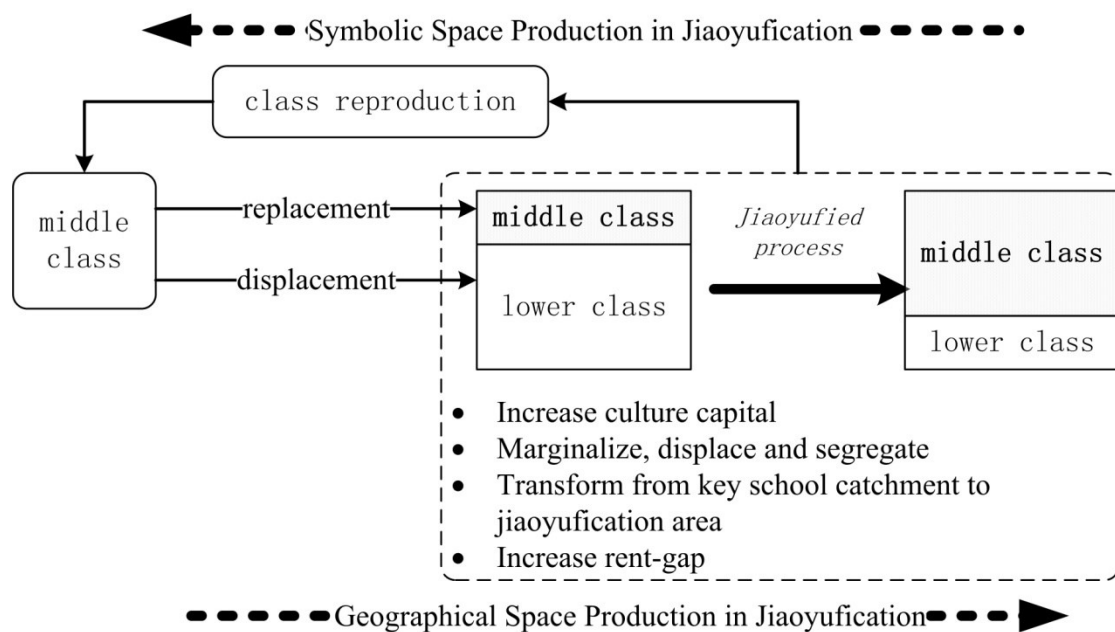


Figure 1 Displacement and replacement in the production of Jiaoyufied space; figure devised by Jianquan Cheng and Qiyang Wu

The second thread is that *jiaoyufication* gives rise to social reproduction through cultural reproduction, resulting in class remaking (Fig 1). Through daily practices and routines of cultural production emerging from particular expressions of middle class habitus (Bourdieu, 1984; 1991), an ongoing process of class-making unfolds. Sites such as coffee shops and tea bars serve as venues for new and traditional consumption practices respectively,

highlighting the distinctive differences that such practices might express. The social consequences of these endeavors to reproduce cultural capital may result in the consolidation of the intergenerational social status of middle class families (Robson and Butler, 2001). But it may also provoke inter-generational or intra-generational upward social mobility that is pursued by lower class and newly rich families with lower social and cultural capital than existing *jiaoyufiers* (Brown et al., 2013). Accordingly, *jiaoyufication* is more concerned with social class reproduction through territory-based cultural production within the catchment area of “good” schools. By contrast, other sociological studies in China solely focus on the reproduction of middle class identity through intergenerational cultural reproduction or everyday practice within the social hemisphere (Tomba, 2004)). Consequently, the territory-based displacement wrought by *jiaoyufication* stirs class tension more profoundly than other middle class remaking processes, since, for example, the rights of the lower classes to receive a good education have been deprived as middle-class families have extensively competed with each other for limited educational opportunities.

Because of an ongoing battle over scarce educational resources and limited residential space, inter-individual and inter-group tensions are inevitable. These strategies for middle class remaking further enhance and intensify the restless social conflict that is emerging in the transition era of urban China (Logan, 2008; Chan, 1996; Nee, 1996; Bian, 2002; Bian, et al., 2005). Indeed, there are at least three social groups involved in the battle for edu-apartments - the new rich, professionals and intellectuals, and bureaucrats - who possess different levels of power, authority and fortune.

The new rich accumulated large fortunes during the process of market transition (Goodman and Zang, 2008). However, they tend to lack the manners and language use that express the cultural capital of middle and upper class people and are applied to secure educational advantages for themselves and their children (Bourdieu, 1991; Nash, 1990). In popular culture, they are frequently labelled as *nouveau-riche parvenus* who behave improperly even though they may be dressed in expensive clothes and drive luxury cars (Pinches, 1999). Such stereotyping has recently extended to internet slang through which they are identified as *tuhao* (土豪), BMW (wo)man (宝马男(女)) amongst other epithets. The former connotes those whose new wealth is accompanied by rude and impolite behavior, while the latter refers to the ostentatious display of wealth through car ownership. Even if the new rich own substantial economic capital they may not be regarded as orthodox members of the middle or upper class. As such, they have strong motives to seek a good education for their children so that they may be granted the cultural reproduction for which they are eager and become assimilated into mainstream middle class society (Lan, 2014; Baltzell, 2011). Since these new rich tend to possess more financial capital than their peers in bidding for the scarce edu-apartments within the key school

catchments, they aggravate the tense relations generated by the battle over core educational resources in the urban housing market.

While professionals or intellectuals are rich in cultural capital (Gramsci, 2005), they own less economic capital and thus rely more on cultural reproduction for class consolidation and increased social mobility (Wilson and Schulz, 1978; Baltzell, 2011; Power et al., 2003). Meanwhile, middle ranking bureaucrats are normally bestowed with more political capital through the sophisticated use of institutional arrangements than other social groups in the battle for edu-apartments, as well as having greater access to high-quality educational resources.

Undoubtedly, *jiaoyufication* has contributed to cultural reproduction based class restructuring in urban China through educational accessibility. This may unlock the path-dependence of social hierarchy based social segregation, and add to or gradually replace it with a territory-based segregation based on middle class remaking through jiaoyufied space production. The methods and case studies in the follow-up sessions aim to understand the social interactions shaping the pattern of *jiaoyufication* using quantitative and qualitative ways.

Methods and case studies

Although Nanjing has been downgraded to the status of a regional city since 1949, it remains a national center for science, technology and education. It not only has 54 universities, over 800,000 college students and 2.61 million residents with college degree or above (31.89% of total registered population, NSB, 2014), but also is reputed to be one of the most advanced cities in pre-higher education (primary and secondary educations) across China. As such, Nanjing is an ideal site to study *jiaoyufication* as part of China's current culture-driven urban social-spatial transition. Figure 2 shows the location of our study area.

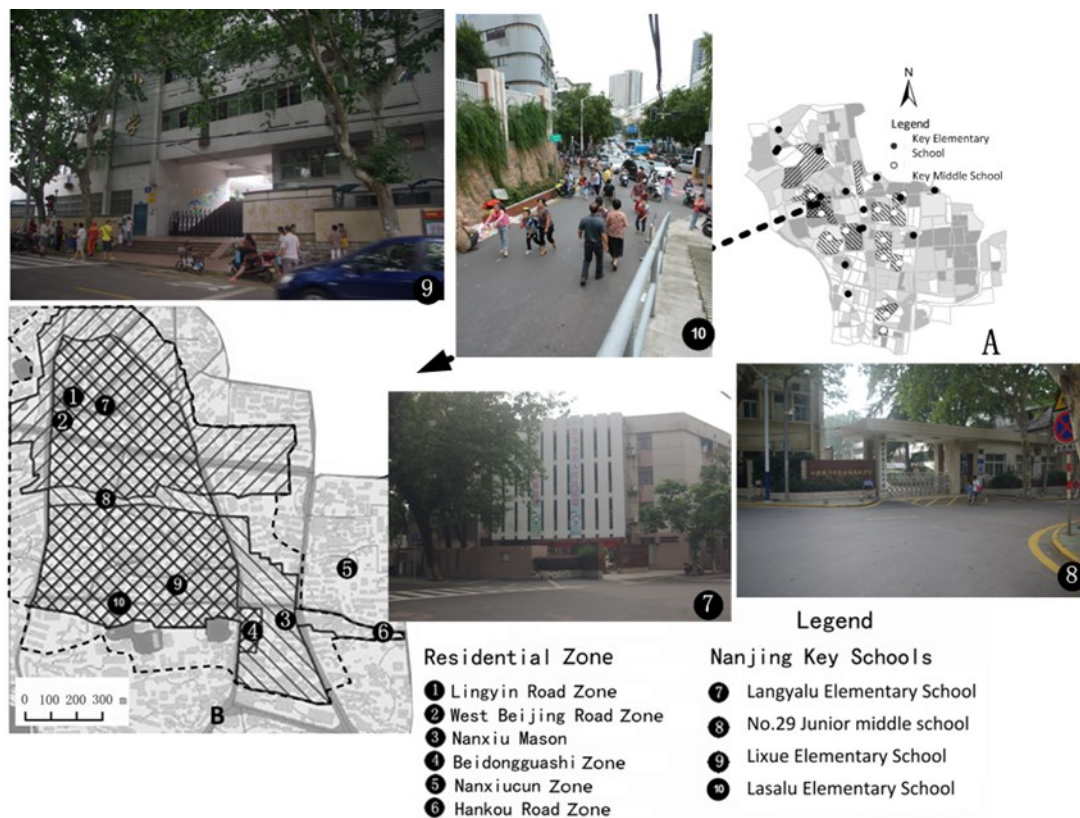


Figure 2. Location of case study area (and selected key schools)
Photographs by Qiyan Wu

This study involves a hybrid research approach of mixed qualitative and quantitative methods. On one hand, a wide range of materials were drawn from interviews and participant observation carried out between 2012 and 2015. Extensive interviews with 37 people were conducted with the following participants: (1) six teachers with different roles, from school principal to general tutor; (2) two officials in municipal and district educational bureaus; (3) ten parents with different occupations and professions, whose children had entered supposedly key schools or had planned to do so; (4) seven real estate agents with different positions (from deputy general manager to low level manager) in different agencies (from national chain real estate companies to local family companies); (5) two social researchers in higher educational institutions; and (6) ten property owners of edu-apartments and non-edu-apartments. These in-depth interviews were conducted in edu-apartment zones to reveal the process of education-driven space (re)production. The study has also explored the potential tensions in the real estate market and residential zones among different social groups, who practice educational strategies of class production, *both* consciously and unconsciously (Bourdieu 1984), and subsequently occupied edu-apartments around key schools and consolidated the class remaking trajectory for which they aimed (Filion, 1991; Waters and Brooks, 2010).

In addition, a web-based stratified sampling questionnaire survey (McAfee and Brynjolfsson, 2012; Loehlin, 1998) was conducted between 2014 and 2015 that involved 1233 college graduates aged 18-35 (see the details in the appendix), followed by occasional face-to-face interviews with fifteen participants subsequently selected from these. This data was then used to develop two structural equation models (SEM) using the statistics analysis software package (AMOS v22 – Analysis of Moment Structures) (<http://www.statisticssolutions.com/amos/>), which aims to reveal the causal and path relationships between pre-higher education, educational attainment and living conditions. SEM, as a relatively new method of modelling and a specific type of econometric analysis, mixes confirmatory factor analysis, path analysis and regression analysis, so can explain the structural relationships between multiple dependent and independent variables. The variables are split into two categories: measurable or latent (not observable) variable, and exogenous or endogenous variable. A latent variable or construct (e.g. compulsory education) is usually defined and quantified by measurable or observable variables (e.g. primary school). In contrast to endogenous variable, an exogenous variable is not affected by models but determined by factors outside of the models.

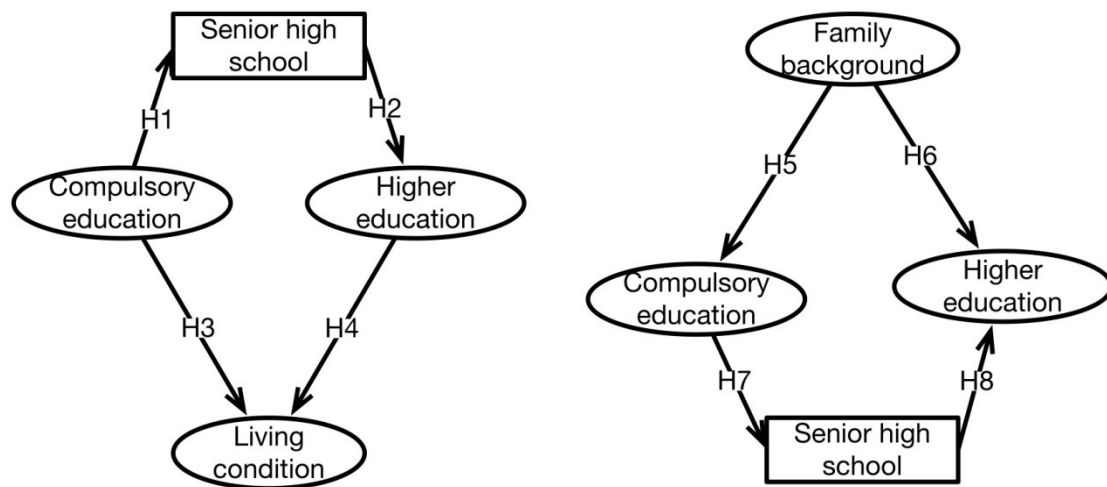
Compared with the ordinary least-square (OLS) regression model, the SEM model, estimated by using maximum likelihood method, is less sensitive to multicollinearity, assumption of normal distribution and measurement error. The popular statistics Chi-square is sensitive to sample size. Thereby, several other indices are frequently used for judging goodness-of-fit from varied perspectives (e.g. Goodness of Fit Index (GFI), Comparative Fit Index (CFI), NFI, IFI, PGFI, and PNFI).

SEM method usually outputs two types of models: measurement and structural models. A measurement model shows the relationships between a latent construct and its indicators. A structural model imputes causal dependencies (relationships) between latent constructs. A typical output of SEM model is a path diagram, the part of structural models. In the diagram, ovals indicate latent constructs and rectangles for observable variables. The true circle is the error term and its value means how error influence an observed variable. Arrows with single sides show path regression indicating the strength of the relationship and arrows with both sides show covariance. The path diagram can be used to analyze various effects between latent constructs. SEM makes a distinction between direct, indirect and total effect which one latent construct has on another. Direct effect is the link going directly from one variable to another. Indirect effect occur between two variables, mediated by one or more intervening variables. Total effect is the sum of direct and indirect effects, representing overall effect. These will provide more accurate statistics in estimating causal relationships. Another strength of SEM is that nonparametric SEM permits the estimation of the three effects without making any commitment

to the form of the equations or to the distribution of the error terms. This has made SEM method particularly useful for modelling social interactions in many disciplines (see examples in Ramkissoon et al (2013), Deutsch et al, (2013)).

In this study, two SEM models, focusing on higher education and living conditions separately, are developed using the web-surveyed data sets described above. These models aim to analyse the causal relationships between the specific social factors, which contribute to the decision behavior of *jiaoyufication* families and the social impacts of *jiaoyufication*. There are eight hypotheses assumed for understanding the social process of *jiaoyufication*: H1-H4 for the path to living condition and H5-H8 for the path to higher education, which have been represented into Figure 3.

In Figure 3 (on the left), higher education is related to the three social factors: senior high school, compulsory education and family background. In Figure 3 (on the right), living condition is related to the three social factors: higher education, compulsory education and senior high school. These models will test the eight hypotheses (hypotheses H1-H4 on the left and H5-H8 on the right) and evaluate the paths, which will be discussed in greater detail below.



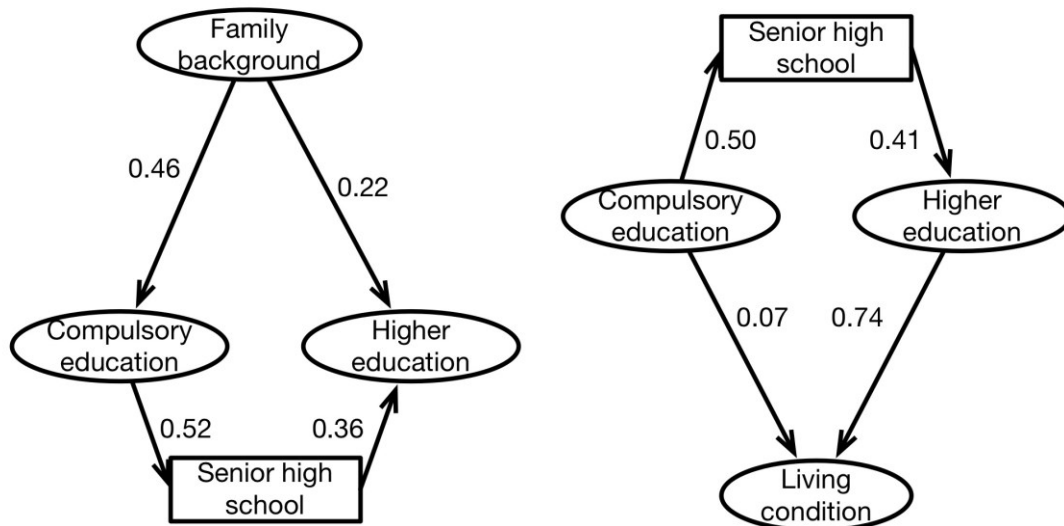


Figure 3. Conceptual model of high-education (hypotheses from 1 to 4, right) and conceptual model of living condition(hypotheses from 5 to 8, left); figure devised by Jianquan Cheng and Qiyan Wu

The Socio-spatial landscape of *Jiaoyufication* in Nanjing

Jiaoyufied space production process

The production of space in a *jiaoyufied* field involves not only institutional arrangements but also the significance of differential political entitlement to *jiaoyufication* (Richardson and Jensen, 2003), implying an uneven geographical development in the production of difference at various spatial scales (Harvey, 2005). This reflects three stages of resident-relocation based urban transition. The first stage takes the form of traditional gentrification (Smith, 1979; Ley, 2003; Hammelt, 1991) whereby the *jiaoyufiers* displace blue collar workers through the real estate market and subsequently transform their neighborhoods as populated by a new generation of middle-class inhabitants (Bridge, 2001; Ley, 2003). For the lower class residents who accepted financial offers from these rich *jiaoyufiers*, this seemed like a 'good deal', and they were 'happily' relocated. However, in agreeing to this practice, lower class families had to sacrifice opportunities for inter-generational cultural reproduction through education. In fulfilling their immediate needs for accommodation, they fell into the trap of social unsustainability, since these properties had been the only possession they had ever owned, apart from their labor. When asking one interviewee, a retired worker, about these apparent disadvantages, he replied with some disappointment, after a long silence,

I ought to have bought a bigger space for the whole family...shouldn't I?...

they [his grandchildren] are worker's children, maybe not good at school

This story echoes Willis' (1977) assertion that the social reproduction of the working class exceeds divergences in fortune and power, as exemplified here where hopes for achieving social mobility through schooling are thwarted.

Secondly, and as a consequence of the process by which jiaoyufiers bought the residences of blue-collar residents, the edu-apartment zones entered a stage of hybrid transition. During this period, most of the rest of the lower class inhabitants were progressively displaced by further jiaoyufiers in addition to which, those previous jiaoyufiers, whose children had come to the end of their secondary education, sold their properties and were replaced by newcomers of the same social status. An original inhabitant described the displacement process:

We were workers in a boiler factory [that subsequently went bankrupt] before the reforms. We and our original neighbours [and co-workers] were all employed in the same *danwei*; they have nearly all moved out. As for our new neighbours, we hardly know them. They bought the flats here for schooling.

The third stage is typified by the remainder of the lower class families departing these areas, as the process of gentrification fostered new forms of urban alienation, and as *jiaoyufication* zones became a type of middle-class urban enclave (Breitung, 2012; Wu et al., 2015) in which only a few blue-collar residents lingered, isolated from residents of a similar class. As an old blue-collar-worker couple remarked:

Our original neighbours [their co-workers in the same *danwei*] have nearly all moved out.... We know little about our new neighbours.

Jiaoyufication-based Cultural Production Process

Jiaoyufication demonstrates a distinctive process of stratification between jiaoyufiers and lower classes that is organized around pre-higher education and creates different modes of distributing cultural capital and reinforcing cultural class reproduction. Bourdieu and Passeron (1990) argue that social classes possess different cultural capital capacity, and contend that the education system has a particularly critical role in the (re)production of cultural capital. Accordingly, the differential accessibility to stratified education resources delineates the pathways of cultural production, and consequently changes the trajectory of social reproduction in class remaking (Sullivan, 2001; Andersen and Hansen, 2012). The web-survey conducted in Nanjing underlines how this educational stratification powerfully impacts on cultural production and social

class formation by differentiating standards of educational attainment between different social groups, thus echoing Nash's (1990: 432) comments that 'the school has become the most important agency for the reproduction of almost all social classes'. Grounding these abstract perspectives, an interviewee displayed a passion for using the edu-apartment to ensure his child could study in a good school. Here, a newly rich middle-class father emphasizes how education can demonstrate his recently acquired status despite the scorn of older middle-class groups:

I know our [family's] disadvantages in culture, although we have more money [than middle class, especially, intellectuals]... but my kids ought to learn more to be respected [by other middle class fractions]... I think we [rich but less educated families] deserved this [the purchase of an expansive edu-apartment]

Certainly, *jiaoyufication*-based cultural production dynamics can be deconstructed to identify two successive paths or impacts of cultural stratification through the structural models in Figure 4. The NFI/CFI statistics calculated from models A and B are 0.970/0.98 and 0.977/0.997 respectively, which indicate the statistical significance of these models – measurement and structural models.

In Figure 4 (model A), there are three latent constructs (higher education, compulsory education and family background) and nine observed variables. The first latent construct, compulsory education, is explained by three observed variables: primary school, junior high school and senior high school. The second latent construct (exogenous variable), family background, is explained by four measurable variables: Hukou of parents, father's education background, mother's education background and occupation of parents. The third latent construct, higher education, is explained by two observed variables: degree and college.

In Figure 4 (model B), there are also three latent constructs (r1-3) (higher education, compulsory education and living condition) and eight observed variables. The latent construct – living condition, is explained by three observed variables: housing, income and occupation. Other two latent constructs are explained by the same set of variables as model in Figure 4. The results of models e.g. coefficients will be interpreted into the following sections.

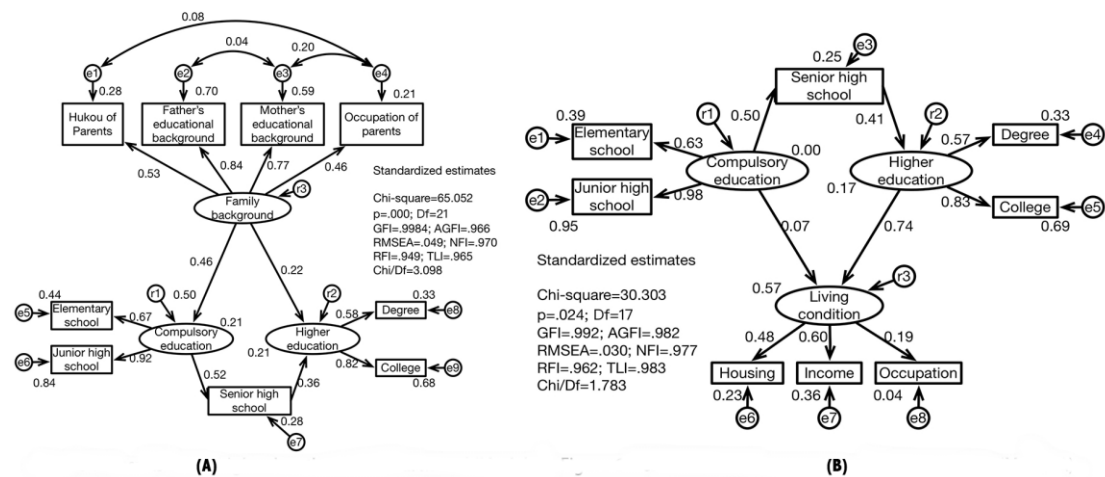


Figure 4. Results of the high-education structural models (Model A (left) and B (right)); figure devised by Jianquan Cheng and Qiyan Wu

(1) *The impact of stratification in pre-higher education upon higher education attainment differentiation.*

The structural model of education in Fig 4 (model A) demonstrates that family status determines or influences educational stratification from primary education to higher education. Family background, as identified via the variables of the parents' hukou, educational background and occupation, clearly has a significantly positive relationship with educational progress in the structural mode, in which the standardized path regression coefficient was 0.46.

However, there is less direct impact of family status on higher educational segregation at a later stage, for the positive path coefficients have been dropped from 0.46 (on pre-higher education) down to 0.22 (on higher education stratification). Attainment here seems to rely more on individual ability and disposition to study rather than family background. Nevertheless, the data reveals that attendance at particular primary and junior secondary schools (indicated by the construct of Compulsory Education) has positive impacts on the senior secondary school (path coefficient is 0.52 in Fig 4 (model A) attended (indicated by the construct of Senior High School), which in turn has an important positive impact on higher education pathways (path coefficient is 0.36). In fact, the pathway of cultural (re)production by which the rich can buy both access to good pre-higher education and indirect access to higher education for their children is much more effective than cultural acquisition through directly "investing" in their higher education, since strict university enrolment policies restrict such access. Thus, the pathway reveals the reasons for the battle of over limited *jiaoyufication* housing among new rich and conventional middle class families.

Interestingly, similar evidence has been found by using the school registration system data of Arizona, USA, in 2015, and field survey and in-depth interviews of realtors, parents and students in Vancouver, Canada, in 2016, that rich locals or international immigrant families geographically concentrate in the catchment areas of 'good schools' more than lower income residents, who register their children in randomly allocated schools of lower reputation. Future research will ascertain whether education-led, territory-based *jiaoyufication* is an emergent global form of gentrification globally.

(2) Higher education-led social stratification

Certainly, in contrast to the primary education that has little impact on educational attainment, higher education stratification significantly influences the socio-economic status of the young generation (Sewell and Hauser, 1972). The structural model in Fig 4 (model B) shows that better attainment in higher education leads to choice of good residential location and occupation of expensive accommodation in later life. Higher education has a very high positive impact on living conditions as the path coefficient from the construct of higher education to that of living condition is very high 0.74, which in turn has a positive impact on occupation, income and housing – as indicated by their coefficients: 0.19, 0.60 and 0.48 respectively (Fig 4 –model B). Once families have purchased an edu-apartment, then they tend to ensure their new generations' upward social mobility through educational attainment.

Social-spatial meaning and the consequence of *Jiaoyufication*

Class remaking through the production of Jiaoyufied space

Jiaoyufication reveals that space has a pivotal role in shaping social reproduction (Giddens, 1984). The processes through which jiaoyufied space is (re)produced encourages the middle class to occupy it as a setting for social consolidation or social mobility. Accordingly, this jiaoyufied space is distinguished as a site of middle class remaking from other spaces, such as those within the catchment areas of non-key schools. Indeed, the institutional arrangements of educational zoning have lasted for nearly three decades since 1986, when the *Compulsory Education Law* of 1986 was issued, continuously reproducing the conditions for jiaoyufiers' cultural and social (re)production. Since such institutional arrangements change very slowly, tensions between middle class families over accessibility to schools intensify, provoking those who are unsuccessful in securing edu-apartments to argue with the education bureau, petition city governments or as a last resort, organize public demonstrations. Nevertheless, as Lefebvre (1991) emphasizes, space is a concrete abstraction of historically specific materials, concepts and daily

practices. Accordingly, no matter how the inhabitants of *jiaoyufication* zones respond to the adjustment of educational policies in quotidian practice, they occur within a space that has been (re)shaped by institutional arrangements. That is to say, the concrete quotidian practices of *jiaoyufiers*, such as purchasing and selling edu-apartments, schooling, and socializing with neighbors have emerged within the abstract political settings of (middle) class formation and control of class mobility.

Jiaoyufied space and its (re)production anchors the geographical differentiation of educational arrangements through a complicated yet stabilizing and enduring path of *regionalization* (Giddens, 1984) that involves daily practices of cultural and social (re)production (Willis, 1981). In reality, *jiaoyufication* zoning at different stages is a spatial consequence of social contention between different social groups for limited high quality educational resources. An official who owned a *danwei* department of provincial educational department within a key school catchment area smirked:

our neighborhood was out of the catchment of Lixue Primary School (in figure 1) at first, *but* [for emphasis] how could they [municipal education bureau who is in charge of zoning the catchment in each city] make such an oversight?... We [original residents] are employees of the provincial education department [municipal education bureau is under its supervision]!... Later, we [neighborhood] were [situated within the catchment of Lixue Primary School]...Sure, my work unit [provincial educational department] of course takes advantages of it [the zoning policy] to provide benefits for its employees

On the other hand, an owner of a non-edu-apartment next to an edu-apartment zone criticized these arrangements:

It [the zoning policy] is irrational,...inclined to favour the rich people and resource-controlling *danwei*,...they [the controlling-resource *danwei* and educational bureau] regulated it [educational zoning] but ...is it right that the poor and work units cannot control these resources and only deserve a poor quality school?

In this context of middle class formation, a *jiaoyufied habitus* contributes to the disparities between *jiaoyufied* places and non-*jiaoyufication* zones and consequently perpetrates cultural (re)production. That is to say, these forms of *habitus* have been embedded within the structuralized differentiation of educational resources by institutional arrangements and market forces from global to individual scales, and from national to local community contexts (Richardson and Jensen, 2003). The Chinese Communist Party's practice of developing an elite education tradition since the 1950s, the emergence of

neoliberal educational reform on a national scale in the 1980s (Mok et al., 2009; Chan and Mok, 2001), and policies of introducing school fees (including 'Temporary Schooling Fee', 'Choice Fee' or 'Increasing Enrollment Fee') [note] have encouraged real estate agencies to transform the edu-apartment market since the early 2000.

School fees demonstrate a close practical and theoretical relation to *jiaoyufication*, for paying for high quality education reflects how economic capital is superior to social/cultural capital acquisition, as Bourdieu (2011) articulates. Undeniably, *jiaoyufication* clashes with the mooted association between neoliberal educational reform and the requirements for equalitarianism in the post-reform practice of China. However, *jiaoyufication* does temporally promote a varied social mix, although it will likely cause greater segregation in the long run. Consequently, we call for further research into urban strategies that aim to provide equal education rights amongst a wide range of social classes, as the US has endeavoured to achieve with regard to college admission among a variety of races.

Jiaoyufied space has been manipulated to serve political strategies that govern educational capital distribution between social groups and classes. With reference to this, an official of the educational bureau commented:

Since we lack enough [good educational resources] to distribute, [we] have to settle upon a solution to zoning edu-apartment... based on tradition...but it [the zoning policy] has been inevitably impacted by [powerful or resource-controlling] work units... A person or *danwei* in a favorable position gains special advantages.

Accordingly, by manipulating the governance of educational capital distribution, jiaoyufied space has become an expression of the state's will, reflecting the interests of a dominant social elite group and resonating with the normative cultural desires of mainstream society. As such, it has inadvertently created a path-dependence of middle class social reproduction through cultural (re)production. Nevertheless, within the field of *jiaoyufication*, each individual jiaoyufier develops a *habitus* that combines with a set of collective dispositions (Bourdieu and Passeron, 1990; Bridge, 2001) in the process of class remaking. For instance, schoolchildren not only develop enhanced confidence and achieve better education attainment than their peers in common schools, but also belong to more prestigious social networks, as revealed in an interview with a parent:

It [classmate, relationship in key schools] is also a treasure when they grow up...after all, *guanxi* [personal relations] is very important to Chinese society...[they are] children of government officials, professors, managers

and officers in army...

In addition to the social networks forged between school children, their parents - from middle class elites with varied social backgrounds - also create high-level social networks. Both forms of network will undoubtedly help to upgrade the social and occupational mobility of these students.

Furthermore, the ruling classes have sophisticatedly manipulated the jiaoyufied zones to divert and weaken the resistance of bottom-up public criticism, a cultural violence fatalistically referred to by a parent residing in a non-edu-apartment:

My family can't afford such an edu-apartment... and I do not possess the necessary social relationships [personal connections]... and so I have to send [my child] to the Primary School on Hankou Road [a non-key school neighboring with the best key schools in Nanjing]... I can only hope that he studies hard to go to a good secondary school with a good grade.

Narrowing the traditional path of bottom-up social mobility

Bourdieu asserts that cultural capital may be conditionally converted into economic capital (2011). There has been a paradoxical relationship between education/cultural capital acquisition and social status expected in jiaoyufication for the following reasons. In the structural model shown in Fig 6, family background, as a latent construct, is indicated by four observed variables, among which the educational background (e.g. years of study) of parents is conceived as cultural capital, while the hukou of the parents and their occupations are expressions of social status.

Here, we can elucidate these issues by referring to the models.

Accordingly, the structural model demonstrates a positive causal relationship between the latent construct of family background and cultural capital and social status (Fig. 4 –model A). For instance, the standardized factor loading of cultural capital is higher than that of social status (0.84 and 0.77 for cultural capital in comparison to 0.53 and 0.46 for social status). It means that cultural capital makes more contributions to family background than social status. These effects could be created through either a direct way (i.e. family background) or an indirect way (following a clear pathway: from family background to compulsory education, to senior high school and eventually to higher education). Consequently, class formation, manifested as living condition (a latent construct indicated by the three observed variables: housing price, income, and the prestige of occupation in Fig 4 – model B), was strongly influenced by higher education and further affected by parents' cultural capital

and social status, and family background, respectively.

However, since the pivotal function of jiaoyufication has been to achieve access to high quality educational resources (from kindergarten to Grade 9) through the purchase of an edu-apartment, it is clear that the real estate market is taking advantage of the demand for edu-apartments by inflating prices to a far higher level than before. Real estate companies compete to develop new residential buildings within the catchment areas of well-known key schools and sell them at a much higher price than those in neighboring areas. As an employee of a real estate agency frankly acknowledged, *'we live on the commission of housing transaction... the higher price it is, the more commission fee we charge'*. Such a strategy requires that these jiaoyufiers attain a higher level of economic capacity than previously.

In fact, there are three pathways of inflating the housing price of jiaoyufication zones (Wu et al., 2016b). The most significant strategy adopted by owners in some neighborhoods is to keep the property and wait for potential regeneration, so that the new-built edu-apartment will provide owners, real estate agents and developers with a much higher reward. Yet while the average family income has increased by 25% per year, from 1995 to 2014 the cost of an edu-apartment has increased by 39% per year according to our survey, further restricting traditional opportunities for bottom-up social mobility. While the acquisition of cultural capital might initially be a powerful asset in achieving upward social mobility, at this later stage of the jiaoyufication process, economic rather than already existing cultural capital is required in the remaking of middle class identity. Accordingly, the path of jiaoyufication is narrowed down by the restrictions imposed by the market, excluding less affluent intellectual families from conventional middle strata, and making new middle classes through "buying" cultural capital.

This tendency thus somewhat suppresses intra-generational social mobility and exacerbates intergenerational mobility by narrowing the channels for bottom-up social mobility that has been regarded as a traditional solution to releasing social class tensions. Traditionally, the lower class could achieve an intergeneration-based upward social mobility through educational attainment (Waters et al., 2010). As Bourdieu (1984) mentions, the logic of transformation between different forms of capital, for instance via prestige, wealth and power, foregrounds how economic capital is superior to cultural capital. Therefore, when the urban new rich are accepted by mainstream society through a cultural reproduction perpetrated via the narrowed path of jiaoyufication, it significantly transforms the social class structure from that characterized by a Weberian trio of wealth, power and authority to a neoliberal structure in which wealth and power predominate, with the consequent increase in social polarization and

spatial segregation.

Beyond territorial tension: a Neoliberal social reproduction?

Jiaoyufication is undoubtedly based on territorial competition over edu-apartments within the catchment areas of key schools; however, the geographical tension among social groups inevitably devolves into a social struggle that exceeds space. As an outcome of urban educational resource distribution, *jiaoyufication* emerged with the neoliberal marketization of urban education reform in the late 1990s (Mok, et al., 2009), as scarce educational resources came to be regarded as a form of capitalized public goods that exemplified the motto of small governance and big market in Deng Xiaoping's neoliberal regime (Wong, 2004; Harvey, 2005). Since then, the rich have been able to consolidate their social status by competitively bidding for the edu-apartments that had access to key schools. This strategy not only curtails the tradition of meritocratic education and consolidates social hierarchy, but also expands geographical unevenness on an urban scale by enlarging the rent-gap through capitalizing institutional resources, further segregating the poor and rich (Wu et al, 2016b). The conflict involved in the process of *jiaoyufication* exceeds the territorial competition depicted from a conventional urban social ecology perspective in, the following two ways.

First, *jiaoyufication* is a hybrid phenomenon of gentrification and urban educational segregation. Nevertheless, it also expresses the reproduction of middle class habitus through cultural and social reproduction (Bourdieu, 1984; Wu et al., forthcoming). As mentioned above, due to the creative-destructive strategy of *jiaoyufication*, the traditional Weberian intra/intergeneration-based stratified society with three structures shaped by wealth, power and prestige (Waters et al., 2010), are trimmed down into an intergeneration-based stratified society with dual structures, as wealth and power gradually come to dominate the social stratification of post-Mao China. Consequently, a distinctly neoliberalist social hierarchy is enhanced and the ruling class's social control is reinforced by the cultural (re)production generated by *jiaoyufication*, through which the new rich of the reform era are gradually absorbed into the dominant classes.

Second, *jiaoyufication* involves a particular Chinese revanchist urbanism. Revanchist urbanism initially refers to how gentrification constitutes a switch towards the reinvestment of economic capital and regeneration of inner city neighborhoods in contrast to previous processes of suburbanization in the western city (Smith, 1996). In China, this has been combined with a post-Maoist counterattack from those rich who were exiled from the social mainstream in Maoist socialist policies since 1955 (Liu and Wang, 2006).

In sum, the *jiaoyufication* process reflects a social-spatial transformation that is an integral part of the trajectory of neoliberal reform in the Chinese city. It is undeniable that *jiaoyufication* is partly shaped by culture-led and education-driven processes of gentrification and territorial contestation among social classes, thus superficially seeming to be a transformation generated by a switch in cultural capital. However, more broadly, it is grounded in a globalized social transformation characterized by creative destruction as workers formerly living in *danwei* residences have been excluded from global social-production cycles and brutally expelled from the inner city (Sassen, 2014) during the economic restructuring of post-Maoist reform (Hudson et al., 2010).

Conclusions

Jiaoyufication has been driven by the institutional arrangements through which educational resources have been geographically redistributed (Wu et al, 2016b). However, as a form of gentrification in a Chinese context, its dynamic impacts on geography extend into social struggle and conflict. With respect to its cultural and economic capital-switching, and class displacement, *jiaoyufication* has emerged within a geographical process of education-driven cultural production and social reproduction. David Ley (2003) reveals how the cultural reproduction of young American professionals by renovating old inner neighborhoods in cities plays a pivotal role in distinguishing them from other suburban middle class groups. However, Chinese *jiaoyufiers* are far more concerned about how the educational capital of their offspring might maintain their intergenerational class identity.

Following the trajectory from individual educational production to collective social reproduction, a dialectic relationship between spatial production and class remaking has been revealed. This socio-spatial process has demonstrated that the urban new rich have been absorbed into the dominant class, while the middle class have reproduced and the inner-city urban lower class have been displaced into marginal spaces. Moreover, fierce competition between the urban new rich, the traditional middle class and the upper lower class over the limited numbers of *jiaoyufied* edu-apartments within the catchments of key schools has produced a distinctive battlefield for social mobility and consolidation.

Jiaoyufication has directly enhanced urban residential segregation and exacerbated social stratification (Zhou, et al., 1998) as the urban poor in edu-apartment zones have been gradually displaced by *jiaoyufiers*, and key school catchments have become a sanctum of middle class remaking and realms for the social assimilation of the new urban rich. Although both gentrifiers and *jiaoyufiers* have displaced blue collar with white collar inhabitants in inner city areas, *jiaoyufiers* have been less concerned about housing renovation as a

means to distinguish themselves from others, as a parent admitted when talking about the flat she owned,

This, my home? ... You know, it's small and old ... It's just to get into the primary school and No. 29 Junior Middle School and that's all (Wu et al, 2016b).

Unlike other new inner city residents, jiaoyufiers are not particularly concerned by the local environment and the quality of properties since they only stay for a short period. And in contrast to Western gentrifiers, jiaoyufiers are more concerned with the acquisition of cultural capital and its transmission to their children to underpin class (re)production, and less focused upon achieving cultural differentiation solely in the educational field (Bridge, 2001). As an extended form of gentrification, *jiaoyufication* may thus be understood as the outcome of a distinctive form of revanchist urbanism in China.

Furthermore, *jiaoyufication* has narrowed the traditional path of bottom-up social mobility and enlarged social polarization in the three decades of post-Mao neoliberal reform. With the emergence of a dual structure in which only wealth and power are significant, traditionally important social groups such as scholars, farmers, artisans and merchants have become internally segregated as wealth and power is increasingly wielded by the emergent classes, while others descend into the lower classes and become increasingly marginalized. This transition not only further weakens the role of cultural/social capital in facilitating social mobility, but also changes the functions of place. For example, edu-apartments in jiaoyufied neighborhoods have become highly mobile 'taverns', sites of elective-belonging rather than a longstanding homes or embedded in a local place-identity.

This research also underpins the spatial fix identified by Marxists (Harvey, 1981) as the distribution of educational resources has been transformed from being based on social hierarchy to becoming territorially configured (Wu et al., 2015). In this case, jiaoyufication has unintendedly readjusted and reshaped the spatial fix, but more crucially, destructive cultural and social (re)production has created a tense new spatial arena for middle class remaking in a broader context of neoliberal socio-economic restructuring.

Note: Based on the "Temporary Act of Management of Obligational Education Schools, Secondary School and College's Charge" issued in 1996. The State Education Commission, State Development Planning Commission and Ministry of Finance and other related departments admitted the incidental expense paid by students at the compulsory education stage. These included a "Temporary Schooling Fee" paid by students who temporarily study in a region in which their permanent residence is not registered, a "Choice Fee" paid by students who

choose a school zone in which they are registered to study by hukou registration, or an "Increase Enrollment Fee" paid by students who are enrolled when a school requests the local educational authority to increase its enrollment.

Acknowledgement

The research is supported by National Natural Science Foundation of China (No: 41671155 & 41271176) and Service Center For the Floating Population, "the dynamic monitoring of the floating population survey in 2015".

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