



Modes of land development in Shanghai

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ARTICLE INFO

Article history:

Received 3 July 2016

Received in revised form

28 September 2016

Accepted 3 December 2016

Available online 11 December 2016

Keywords:

Urban land use

Land development mode

Land policy

Land use modelling

Shanghai

ABSTRACT

Land development modelling and simulation provides critical information and insights for city land resource planning and management. However, studies on simulating urban land development often treat it as a singular and uniform process and neglect place-based decision-making processes and multiple tracks of how urban land is developed. This study attempts to identify the locally embedded, place-based processes of land conversion and redevelopment during the reform period in Shanghai. In doing so, this study conducts in-depth interviews and collects extensive land use and planning data to examine the land development decision-making processes of the city. In conjunction with the content analysis of government documents and urban planning results, this study proposes to frame the current land development of Shanghai into State-led Market-based Land Development, Informal Land Development, State-led Land Redevelopment, State-approved Independent Development, and Megaproject-based Land Development, according to land use types, property rights, and intermediate agencies. By comparing urban planning and actual land use change data, the study delineates the location and estimate magnitude of each of the land development modes in Shanghai. Different from market-based land development systems, the results show that the state interventions in the land market has been prevalent to create a unique government-led land development system with multiple approaches and land use change trajectories in Shanghai. The result explains why current land development modelling and simulation cannot mimic the actual land development process properly. Furthermore, the study provides the empirical basis for new theorization of land development in China.

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1. Introduction

Land development modelling and simulation becomes increasingly a tool for policy making in modern urban management (Alfeld and Graham, 1976). It provides a computational and visualizational framework upon which significant spatial and temporal information on mechanisms of landscape evolution can be revealed (Berry, 1964). To date, modelling and simulation studies have largely treated urban land development as a singular and uniform process and often neglected place-based decision-making processes and multiple trajectories that urban land could be developed (Batty, 1997; Dragicevic and Marceau, 1999; Wu and Martin, 2002; Parker et al., 2003; Xie et al., 2007; White et al., 2012; Wang and Marceau, 2013; Feng et al., 2015).

In market economies, land development in cities is mainly executed by private developers under a competitive environment. The process of land development follows a market principle of utility maximization and urban land is assessed for its suitability and

potential profitability. Land with greater suitability and profitability is normally developed first and then the development of less suitable and profitable land is followed. Such market logic forms the theoretic foundation of most studies on land development modelling and simulation in recent decades (Batty, 1991; Deadman et al., 1993; White and Engelen, 1993; Wu, 1998). However, these models show some limitations when they are applied in the context of non-market or socialist market economies where the role of market is limited and government agencies intervene land development process frequently. For instance, the planned development of 'polycentric city' and 'special economic zones' often defeats the market logic and causes leapfrog developments in the suburbs of metropolitan areas (Gordon and Richardson, 1997; Bae and Jun, 2003). The existence of non-market forces in land development undermines the utility of market-based models that often treat land development as a self-organization process. This problem is particularly acute in China because Chinese urbanization processes have been heavily shaped by distinctive institutional factors including ambiguous land property rights, land development administration policies and socialist planning systems in the course of transition to market-oriented economy (Gaubatz, 1999; Qiu et al., 2015). It is therefore imperative understand various forms and processes

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of land development in different geographic contexts in order to develop valid urban land development models and simulation procedures.

This study is going to identify the specific modes of local land development and investigate how government agencies, regulatory policies, and various actors are involved in the land development and decision-making process. Furthermore, the study is going to assess the spatial effects of different modes of land development in the city. Using Shanghai as a case, this study provides a theoretical basis for future land development modelling in China. We collected data from our in-depth interviews with urban developers, urban planners, and urban land use administrators and various government policies and planning documents and synthesize them to induce five modes of land development in Shanghai. By comparing the planned and actual land use changes, we mapped the spatial extent of these land development modes and assess the effect of each land development during the study period. The findings of this study lay the groundwork for future land use growth modelling and simulation in Shanghai.

The next section reviews land development theories pertaining to urban land growth and evolution simulation. This is followed by a discussion of research approaches. The empirical results are then presented. The paper is concluded with a discussion of the findings in relation to the relevant literature.

2. Theorizing land development

Since the late 1960s, with the rapid development of computer technology, urban growth and evolution simulations have mushroomed in urban and land use studies (Crecine, 1968; Forrester, 1969; Batty, 1971). Backing up the flourishing urban simulation models are two of the main land development theories: market-based and government-led land development models.

2.1. Market-based land development (MBLD)

In a market economy, land is owned privately. Land functions primarily as a commodity and its site attributes and situation characteristics determine how the land is used and its use is changed in a city. According to the neo-classic theory, urban land is developed in a competitive and efficient manner by those who are most competitive to bid for the rent of any land parcel. The spatial consequence of the market competition for urban land use is a concentric pattern of land use following a land value gradient descending away from city center to outskirt (Alonso, 1964; Mieszkowski and Mills, 1993; Harvey and Jowsey, 2004). The market-based land development process is rooted in a free and competitive market in which production and trading of land are regulated by land supply and demand. In such competitive markets, private property rights are protected, juridical individualism dominates, and an established legal and institutional system guarantees the operation of the market (Lin, 2009).

2.2. Government-led land development (GLD)

While most developed countries adopt a competitive market system, land development is not exclusively determined by the market forces of demand and supply. Landowners, capital investors, real estate developers, land use planning specialists, politicians, stakeholders, and social, political, and economic organizations all influence the decision-making process of land development directly or indirectly (Healey and Barrett, 1990). Many attempts have been made to theorize and model the effects of non-market forces on urban land development. Two strands of theorizations can be found in the literature: one is on the government-led growth theories, especially Growth Machine Model (GMM) and the other on

the government-led balanced land development theories, of which Urban Regime Model (URM) is influential.

Focusing on the economic attribute of urban land, GMM indicates that urban land growth is predominantly driven by the land-based elites who primarily aim to capture land exchange surplus values (Logan et al., 1987; Pfeffer and Lapping, 1994; Smith and Floyd, 2013). The land development process in a city is identified as economic growth seeking activity. Land developers, financial investors, and government agencies will collaborate with each other for the boom of economy and self-benefits. One of the key assertions behind GMM is the possibility to direct/redirect social, economic resources into specific urban locations to stimulate urban growth (Smith and Floyd, 2013). This is also known as place-based and place-making procedures (Bohl and Schwanke, 2002). Dockland development projects in London and La Défense project in Paris characterize this approach (Hoyle et al., 1988; Drozd and Appert, 2012).

Different from the coalitions formed among stakeholders to promote economic growth, the URM stipulates that governmental and non-governmental actors collaborate with each other for the achievement of assorted social and economic interests (Stone, 1989; Mossberger and Stoker, 2001). The theory asserts that stability and sustainability of urban development can only be achieved through an effective urban governance. For instance, many of European countries have been endeavoring to carry out social housing projects to eliminate housing inequality and achieve mixed sustainable communities (Whitehead and Scanlon, 2007).

The existence of these government-led land use development processes shows that the utility of the prevalent market-based simulation models is limited. Under the assumption of a market-led land development process, it is often believed that urban land development process follows a bottom-up self-organization mechanism and accordingly it is possible to model and simulate the dynamic process of urban land development in a market economy based upon the urban complexity system theory (Batty, 2007). However, the actions of utilitarianism governmental and non-governmental agencies break the bottom-up and self-organization presumptions originated from a unitary market economic system. Instead of a bottom-up, self-organized procedure, government interventions and the place-based decision-making procedure among involved agencies bring about multiple possible trajectories of urban land development processes. This phenomenon is particularly evident in China, where distinctive land property rights, land development administration policies, socialist planning system and transition to market-oriented economy characterize conspicuous land development procedures. Therefore, it is imperative to differentiate various land development modes before a sound computer modelling and simulation procedure can be developed to model urban land use changes among cities in China (Guy and Hanneberry, 2008).

2.3. Land development process in China

From 1949 to 1978, under the socialist command economy, most of the land in China was owned by either the state or rural collectives (Zhang, 1997; Xu and Tang, 2014). The state allocates land for residential or industrial uses (Yeh and Wu, 1996). This land allocation system has been gradually replaced with the “land-use rights system” (tudi shiyongquan) during the course of economic transition after 1978 (Ding, 2003). In 1988, the amendment to the Constitution of the People’s Republic of China made it official that land use right can be transferred with compensation in accordance to relevant legislation. Under this new regulation, the property rights of land was effectively de-bundled into land ownership rights and land use rights (LURs) (Lin, 2010). While the land ownership rights remain unchanged, the state and collective landowners were

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