

**SHAPING URBAN FORM WITHOUT ZONING:
A CASE STUDY OF HOUSTON**

A Dissertation

by

ZHU QIAN

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2008

Major Subject: Urban and Regional Sciences

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ABSTRACT

Shaping Urban Form without Zoning: A Case Study of Houston.

(December 2008)

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Houston is the only major city in North America without zoning. The growth of Houston illustrates a traditional free market philosophy in which land use zoning is seen as a violation to private property and personal liberty. This dissertation explores how the lack of zoning has an impact on land use and urban form in Houston. It is based on a theoretical framework derived from economics and public policy theories for institutional analyses of land development controls.

The dissertation uses cluster analysis integrating socioeconomic factors from census data to select three case study neighborhoods, and then applies GIS to analyze their urban form spatial characteristics with spatial data from Houston Planning Department. It also uses qualitative methods such as archives and documentations for the three neighborhoods. The study investigates the change of urban form in three case study neighborhoods over two decades. It also explores how local land use policies made by both the local government and non-governmental sectors shape urban form in Houston.

The study results show that despite the city's lack of zoning, local land use regulatory policies made by the municipality have significant influence on urban development. Additionally, civic and private organizations such as super neighborhoods and homeowner associations fill the gaps left by the lack of land use zoning. These two aspects contribute to land use planning and urban form of the city.

Houston presents a contradiction of limited government intervention and public investments and subsidies. Land use controls by private contract and by government legislative intervention are not mutually exclusive or immutable. The study finds that it is difficult to achieve mixed race and income neighborhoods, even without zoning. Equity goals are not met in

market approaches. Deed restrictions might be better at facilitating property sales and maintenance than at improving community welfare and governance.

From the theoretical perspective, the study argues that a spectrum of market solutions and planning approaches at the ends are more relevant than the bipolarity view. Equity goals are not met in market approaches. For welfare and rights, public planning intervention is necessary. The market might provide physical land use diversity, but it fails to support socioeconomic diversity.

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CHAPTER I

INTRODUCTION

Research Background and Issues

Houston is the only major city in North America without zoning. The growth of Houston illustrates a traditional free market philosophy in which land use zoning is seen as a violation of private property and personal liberty. In such a *laissez-faire* city, public-sector-initiated urban planning policies are limited, especially at the neighborhood level, in comparison with other cities in the country. Instead, many urban development policies and plans are made by the private sector and by business associations. Except for limited daily urban needs, transportation and infrastructure that are the responsibilities of the public sector, planning (especially that which effects economic growth) is initiated, developed, and monitored by the private sector (Fisher, 1989). Bernard Siegan's *Land Use Without Zoning* (1972) remains the definitive document on Houston's "nonzoning". According to Siegan, the market place provides economic incentives for segregation of uses and produces patterns of development similar to what is found under zoning. Siegan also sets forth the argument of Houston's unplanned, unregulated development in a set of articles defending the City's refusal to enact a zoning code. He asserts that land use regulation in Houston is extremely modest when compared to what is contained in most zoning ordinances because Houston has no ordinance that sets forth specific restrictions on the uses that may be established on any property. However, during the past three decades, Houston has adopted more planning tools and involved diverse organizations in land use.

Recent studies address Houston from different perspectives such as urban geography (Kirby and Lynch, 1987; Vojnovic 2003), political science (Gainsborough, 2001), public policy (Fisher, 1989), and legal and economics (Berry, 2001). Houston is often portrayed as an archetype free enterprise, capitalist, or *laissez-faire* city (Feagin, 1998; Lamare, 1998; Lin, 1995). In the meanwhile, Houston's minimal government intervention rhetoric in practice involves extensive and active federal, state and local government involvement in economic development in combination with a disinterest in social service and income maintenance programmes (Vojnovic, 2003). Government intervention in Houston's growth has been vital and has produced the extraordinary impacts expected from public involvement in local economic development. Despite

the fact that there is no quantitative research on Houston's lack of zoning and its urban form, there has been narrative descriptions regarding Houston's land use controls and urban form (see for example, Kirby and Lynch, 1987; Lin, 1995; Vojnovic, 2003).

Then how, and to what extent, does the lack of zoning influence urban form of the city and its neighborhoods? How does local land use regulatory policy practice work in this unique political economic setting? How do civic and/or private organizations get involved in land use controls to influence land use at the neighborhood level? And how well do the private land use interventions work in the neighborhoods? What are some of the reasons for the neighborhood land use diversity and changes? This study tries to address these questions.

The question of urban space and form has not been sufficiently examined in Houston research. There is a further aspect that needs attention, and that is the spatial analysis and internal transformation of Houston subject to the pressures of globalization and growth. Along with growth, metropolitan cities like Houston tend to move from monocentric forms towards polycentric structures. Houston's twenty plus activity centers are the main nodes of the city's polycentric structure. Furthermore, there are gaps in the debates, which include the finer grain understanding of the impacts of various forces and physical forms. A further complication is that many of the debates and issues are separated in academic research and publication. That is particularly true for the two debates which are primarily discussed in this research: the free market land use governance versus more government interventions in land use debate and that of the physical urban form. This research attempts to link the concepts.

Aim and Objectives

This research explores how the lack of government zoning ordinance has an impact on urban form and land use in Houston. It investigates three super neighborhoods, which have different private land use control status, to reveal the diversity of their land use patterns and their chronological land use changes. The hypotheses of this research are: 1) Despite the lack of zoning, Houston's regulatory land use policies (with many zoning elements) have significant influence on its urban development and urban form, particularly at the citywide scale; 2) private land use controls (i.e. the deed restriction status) may result in the diversity of land use patterns and the different degrees of chronological changes of land use at the neighborhood level; and 3) such diversity and chronological changes are closely associated with the neighborhood socioeconomic characteristics, such as age of neighborhood, household income level, education

attainment, housing ownership, property value, etc. Neighborhoods with similar socioeconomic characteristics may have different land use pattern due to their deed restriction statuses.

The dissertation examines the change of urban form and land use in the city and its case study neighborhoods without zoning regulation, and explores the reasons behind those changes. From the institutional perspective, it explores how local land use policies made by both the local government and non-governmental sectors shape urban form and land use in Houston, a city born out of several anti-zoning battles. Despite the city's lack of zoning, local land use regulatory policies and some limited plans made by the municipality have significant influence on urban development. On the other hand, civic and private organizations such as super neighborhoods and homeowner associations fill the gaps left by the lack of land use zoning. The study examines how these two aspects contribute to land use planning and urban form at both city and neighborhood levels.

The research uses both quantitative methods (i.e. GIS spatial statistical analysis) and qualitative methods (i.e. document review, formal and informal data gathering, and semi-structured interviews in Houston). The dissertation seeks to provide insight into the relationships between urban form, the lack of zoning ordinance, and neighborhood planning. It also sheds light on the debates on limited government intervention in land development controls, and applicability and difficulties of applying two strands of theories, institutional economics and public choice, to the empirical case of Houston.

Conceptual Framework

Conventional land development control like zoning is usually justified by planners in social welfare theses as an important approach to alleviate market failure such as negative externalities or social cost, and provide public goods. Those public goods are believed to be disinterested by the free market to provide an adequate amount due to the high cost of direct pricing. These arguments are originally developed from Pigou's seminal book *The Economics of Welfare* (1932). Zoning largely denies possible private negotiation and resolution.

In challenging the Pigovian market failure and government intervention arguments, Ronald Coase in his seminal papers (namely *The Nature of the Firm* in 1937 and *The Problem of Social Cost* in 1960) raises the concept of transaction costs and proposes a thinking of free market and anti-government intervention. Coase questions the Pigovian efficiency calculus by focusing on the transaction costs of regulative policies. Coasians argue that since the market can handle externalities only if transaction costs are zero, Pigovian interventionist approach is unnecessary

and undesirable. Zoning does not improve land use efficiency and zoning is a zero sum game. In planning literature, a dichotomy seems to appear where the Pigovian paradigm is one for zoning and the Coasian paradigm is against zoning. Explanations of planning in social welfare terms associate planning with government intervention, juxtaposing the public sector with the free market.

In institutional economics theses, Coasians consider government as being less efficient than the market, and takes zoning as such an inefficient example. This argument however needs to be taken with Coase's caution that it does not do more than suggest that governmental regulation should be curtailed (rather than completely removed). He states that government intervention argument "does not do more than suggest that governmental regulation should be curtailed" (Coase, 1988: 119). The relevant problems are when to intervene and how to intervene for government to minimize inefficiencies and social inequities and how is the effectiveness of the intervention. Coase's arguments and Coasians' empirical studies suggest that the important point is not making a choice between zoning and non-zoning, but the institutions of either zoning or non-zoning.

The review of Pigovian and Coasian paradigms does not provide clear answer to the reasons for public choice of land use control. Zoning is also a political response to land uses by the motivations behind it. But Coase deftly sidesteps the fundamental political and moral issues about the distribution of power, welfare, and opportunity (Banerjee, 1993). Regarding the question of why society chooses zoning (or non-zoning), Lai (1994) in his review of Coase's theory of institutional economics suggest that it is a question of the nature of public choice in a land use restriction process. In property rights concept, an institution, like the planning system, is a result of public choice (Lai, 1997). A large part of the literature on zoning assumes that optimal regulations are imposed, but does not address the question of whether participants (bureaucrats, planners, developers, and residents, etc.) have incentive to follow the optimal rules (Pogodzinski and Sass, 1990).

The Coasian and public choice theories imply that when geography, time, local politics and life style choices are added to the debate about zoning, it is difficult to decide what, when, where, who and how to control land use. There is, therefore, no general conclusion to the merit of zoning debate. Instead, the debate on zoning has to be case specific, context specific, locality specific as individual cases because local geographical, political, social, and economic conditions are significantly variable. The relevant questions might be why the society chooses a specific land zoning system and what are the political and socioeconomic reasons behind such option.

A better understanding of social welfare and institutional economics theses might be the

distinction between public planning by government and private planning by non-government in the market, instead of a distinction between free market and government intervention. It is possible public planning and private planning coexist, and then the critical question to ask is how they coexist and to what extent they get involved in land use boundary delineation. Houston provides an excellent opportunity in this regard. There is a need to explore the rules or workings of development controls of private contractual zoning such as Houston, in which government and private sector interface. Contractual zoning can be understood as a property rights activity and a direct coordinating activity. This is particularly intriguing when planning co-exists with the private sector market place. For contractual zoning between private agents, the issue of scale of the area within which they are applied (city wide versus specific neighborhoods) is also debatable.

While research on private contractual zoning (e.g. the comparative cases for Houston and Dallas) usually focuses on property values and its socioeconomic results (e.g. racial segregation), different degrees of land use restrictions may result in cross-sectional spatial form variations among geographical areas (e.g. neighborhoods). Chronological changes in land use restrictions may also result in spatial dimension variation in a neighborhood under a given land use control system. Both cross-sectional spatial form variations and chronological changes can be a comparative approach to reveal how lands with or without private contractual zoning evolve. For government intervention, even in the case of contractual zoning where such intervention is curtailed, the imposition of constraints for market operation does not directly interfere with the spatial aspects of production. Instead, those interventions are typically achieved through tax, subsidy, or production quota. However, by using a series of rules, policies, and standards for land use activities, and government infrastructure system, government funded mega projects, and urban regeneration, planners held land use intervention tools from spatial aspects which regulate the location, dimension, density, time of the production. Spatial dimension of land is the result of a specific institutional design. Further discussion of the conceptual framework for this study will be made in Chapter II.

Research Methodology

Based on the research hypotheses and the literature review, the research questions can be grouped into four interrelated headings:

- 1) A relationship could be established between land use controls and urban form.

Alternatives to zoning, in this research, were taken more as political rather than as

- professional means, driven by political interests. The first questions addressed the political reasons for Houston's land use system and its contributions to the city's urban development in its history.
- 2) Despite of the lack of zoning, Houston has regulatory land use policies with zoning elements. The second questions critically examined Houston's land-use policies, planning and urban form at the citywide scale.
 - 3) Neighborhood land use patterns are formed by political institutions at community levels. Houston's diverse land use patterns helped to understand the social, political and economic reasons underlying the neighborhood diversity of urban form. In the meanwhile, the practice of private covenants as a land-use control means provided an example of a collaborative planning approach where land users make decisions on their surrounding environment. As Zhang (2001) concluded in his research about Chicago, urban growth is rooted in the features of neighborhoods rather than a direct consequence of spatial-related factor. Urban form is a dynamic process which evolves over time as the outcome of changing land use polices and agreements. The third questions analyzed land use controls at the neighborhood levels using an institutional approach.
 - 4) Neighborhood local factors include the socio-economic situation of a neighborhood, including demographic changes, the community's economic status, and its education quality. The factors also include housing stock and land use policies. This research considered local factors such as age of neighborhoods, household income level, education attainment, housing ownership, and property value. The questions resorted to quantitative analysis. The results were used to explore how the urban forms were determined by the deed restrictions and how well findings in neighborhood land use controls qualitative research could explain the spatial statistical results.

The overall research strategy was focused upon a case study of the neighborhoods. Using GIS, the study conducted spatial statistical analysis for the urban form for each of the neighborhoods over two decade period (from 1985 until 2005). In addition, the statistical analysis compared the results among different neighborhoods. The urban form of the neighborhoods was measured by five dimensions: (1) *Street systems*; (2) *Density*; (3) *Land use mix*; (4) *Accessibility*; (5) *Pedestrian access*. The qualitative research focused on land use planning tools that had influence at neighborhood level in particular, such as subdivision plats, deed restrictions, super neighborhoods and their responsible organizations. The result of this empirical research was to analyze the impact of neighborhood planning approaches on urban form in an unzoned city, and to reveal the implications in land use planning and (non)zoning. Based on the anticipated research

results, the specific methods employed were documentation and archival records. Chapter III will further elaborate the research methodology used in this research.

Structure of Dissertation

The dissertation consists of six chapters. To begin, Chapter I introduces the research background and issues, articulates the aim and objectives of the study, and briefly describes the conceptual framework, the research methodology and the structure of dissertation.

Chapter II addresses the theoretical and empirical perspectives in land development control. The theoretical research foundation for this study is derived from the growing literature on the land development control, especially the institutional economics theories and the public choice thesis. Meanwhile, the empirical and contextual foundation of this study is based on the body of literature on market supported planning and development control, the critics on zoning as the mainstream land development control, and Houston's land development control system. The brief examination of relevant theories, models, views, and experiences in each of these areas provides a background and conceptual framework for the study, and eventually fulfills the objectives set for this research. The key ideas from these research studies are used to structure a conceptual framework for this study and to guide the empirical analysis of the field data collected.

Chapter III is primarily a methodological discussion for the study. Following the aim and objectives set for the study, it first identifies the overall research strategy of this study, and then explains the rationale of choosing Houston and its three super neighborhoods as the case study. Data collection, qualitative and quantitative analysis and interpretation methods are also explained.

Chapter IV highlights the significance of urban development and land use control practice in Houston. The author examines the challenges encountered in Houston's urban growth and land development practice, focusing on urban development and growth, political culture, zoning attempts in history, annexation policy, major infrastructure, activity centers, government intervention in land use control, and non-government sector efforts in land use control. Instead of addressing extensive issues in Houston's urban growth and land development control, this chapter provides a close observation of Houston by investigating the key characteristic components of the evolving urban growth, the political culture behind it, and land development controls from both government and non-government sectors. A better understanding of land development controls in Houston facilitates future strategies over land policy making and administration.

Chapter V examines land development control and measures urban form in Houston's three super neighborhoods selected by socioeconomic status, and discusses the qualitative characteristics of the three super neighborhoods. In contrast to the previous chapter's focus on the citywide land use issues, this chapter focuses on land development control issues and urban form at the super neighborhood level. The chapter first analyses the socioeconomic status of the city by using block group. It then selects three super neighborhoods according to their socioeconomic status, and measures their urban form by using five different dimensions. The chapter investigates how the history of land development, the changes of socioeconomic composition, and the current land use controls in three super neighborhoods have impacted upon urban spatial form. In short, this part primarily measures urban spatial form in three super neighborhoods and employs qualitative approach to explain some of the reasons behind the formation of the land use patterns in those super neighborhoods.

Chapter VI consists of three sections. The first section discusses the policy implications of Houston's land use plans, regulations, and governance under a land market mechanism with limited government intervention based on the evidence of land use governance practice and resultant urban form. In analyzing the problems revealed in the land development practice in Houston, the study attempts to find out the problems that underlie the current land use governance mechanism and draw out policy implications and recommendations. The second section revisits the debates on plan versus market, making the arguments from the lessons learnt from the Houston case. The third section focuses on the theoretical debate of the two strands of institutional economics theories, the Coasian theorem and public choice theory, which provide the conceptual framework for this study. The discussion analyzes the applicability and difficulties of these two theories in addressing land development and urban form in Houston, and explores how to use institutional economics thoughts in theory for the empirical case. The recommendations for future research are provided at the end of this chapter.

CHAPTER II

LAND DEVELOPMENT CONTROL: THEORETICAL AND EMPIRICAL PERSPECTIVES

Zoning, one of planning's central mechanisms, is widely understood as a police power, a basic right of governments to make laws and regulations for the benefit of their communities, given to municipal governments to put restrictions and delineations on land use rights. For the purpose of promoting health, safety, morals, or the general welfare of the community, the legislative body of cities and incorporated villages is empowered to regulate and restrict physical dimensions such as height, stories, structure size, population density, and location for trade, industry, residence, or other purpose. Modern zoning originated in Germany in the late 19th century (Nelson, 1977:8). The planning acts of the early 20th century in the UK conferred zoning power on its local authorities (Grant, 1982). In the US, nuisance controls was put on a statutory basis in 1885 in California to discriminate against Chinese immigrants. The practice of zoning in the US can be traced back as early as 1916 when New York City passed an ordinance which divided the entire city into four zones: residential, commercial, "unrestricted", and "undetermined". Zoning became much more popular when the US Supreme Court declared it to be constitutioned in the Euclid case in 1926. This represented a significant extension of the police power in that it enabled a municipality to prohibit uses which were not "nuisances" in the strict sense of the term. Today, all fifty states have planning and zoning enabling legislation, most of which descended from *Standard State Zoning Enabling Act* (SSEA) or *Standard City Planning Enabling Act* (SCPEA).

The eighty-year practice of zoning generates much discussions over the "good" and "bad" of zoning, and for some, even the necessity of zoning as a conventional governmental intervention in land use planning. These discussions cover those academic fields such as law, public administration, urban/land economics, urban geography, urban sociology, and legal issues in planning. The acknowledgement that zoning's theoretical debate has its roots in mainstream economics comes relatively slowly to planners. Many discussions over zoning in other fields tend to isolate their discussions over zoning from the economic perspective. Even for those that do have a slight touch, deserved credits have not been given to economic theories. Certainly, planners, both in academia and in practice, are very familiar with at least two important economic concepts, namely market failure and externalities. Zoning is a necessary government intervention to deal with externalities and market failure. Such kind of justification for zoning has been challenged by the anti-interventionists who support the notion that zoning is unnecessary as it

distorts efficient land use pattern and that land use planning should describe or follow the market. Furthermore, in contrast to market failure, there is government failure in a political response like zoning. These arguments are well known and have their groups of proponents. They are derived from three mainstream political economic schools: social welfare economics theses, transaction costs theses, and public choice theses. Before deriving anything to structure research framework for this study, it is worth discussing those three strands of theories. They provide a powerful analytical approach to investigate zoning as policy and function.

Social Welfare Theses

Zoning is usually justified by planners in economic theorizations as an important approach to alleviate market failure such as negative externalities or social cost, and provide public goods. Pure public goods are, by definition, goods which are consumed equally by all (non-rival consumption) and goods from which the public cannot be excluded. With those theoretical ambitions, zoning in practice is implemented to separate incompatible land uses, encourage compatible land uses, encourage positive or prohibit negative externalities through development control measures, and arrange and/or reserve public goods like open space, natural environment, roads and mass transit, public housing, community facilities, and infrastructure right-of-ways. Public goods are those goods that the free market is believed to be inherently disinterested in providing an adequate amount, because consumption is joint and not exclusive for certain types of goods.

These arguments on externalities, social cost, and public goods are developed from Arthur C. Pigou's seminal book *The Economics of Welfare* (Pigou, 1932). Pigou's interventionist thesis revolutionized the libertarian neoclassical tradition and provides justification for government intervention on efficient resource allocation. Pigou in his book introduced the concept of external effects, or externalities, which is a type of market failure. Since the market only responds to private benefits and costs, it fails to equate marginal social costs. Thus, externalities may rise where the positive benefits obtained by a party are at the negative cost of another who is uncompensated for his/her value loss (the Pigovian theorists typically take 'pollution' as a kind of negative externality). Those uncompensated social costs would create economic inefficiency, because the profit mechanism only works according to private benefits, and the social costs borne or social benefits reaped by third parties are not reflected in the price. Pigovian economists argue that the government should intervene in the market to correct the inefficiency by making up what the free market is believed to be unwilling to produce through a

compulsive tax system. They, of course, assume a positive role of government in the intervention. In addition, they assume that government interventions incur zero transaction costs (transaction costs refer to all costs other than the costs of physical production). For planning, the Pigovian theses are pro-zoning which provides strong justification for zoning, and even broader, planning. There are at least three inherent assumptions in Pigovian social welfare these--the locational, timing, and quantitative accuracy of reserved land for each zoning category, the reasonable spatial distribution, as well as competent and unbiased government intervention. In history, the Pigovian paradigm seems attractive to the planners because planning as a profession came into being during the Industrial Revolution when government interventions were used to deal with environmental problems that were believed to be caused by the market failure. Pigovian version of market reformation can be understood as an alternative to the Marxist market displacement model. By the 1950s and 1960s, the theoretical paradigm for planning as a government endeavor was determinedly interventionist. Theorists like Ronald Coase's disputation of the Pigovian approach had little influence on planners during that time.

Traditional text books on land use planning adopt Pigovian approach. For instance, Lean's *Economics of Land Use Planning* (1969), Cooke's *Theories of Planning and Spatial Development* (1983), Hoch et al., *The Practice of Local Government Planning* (2000), Berke and Godshalk's *Urban Land Use Planning* (2006). Those pro-interventionist books support the necessity of government intervention in land use planning though the limitations of such kind of interventions are also acknowledged. The strong supports for Pigovian approaches can be felt in academic journal papers as well. For instance, Dunham (1958) defended government intervention in land use through SCPEA with the intention to positive social welfare, efficient land use in the process of development. Dunham argues that the legislation for zoning "speaks of 'securing' or 'preserving', 'avoiding' or 'preventing' certain enumerated evils as the purpose for which zoning is permitted" (Dunham, 1958: 182). He goes on and argues that planner interference is consistent with a market economy when the market itself has limitation in dealing with the external impact on neighboring land. Oxley (1975), Moore (1978), Walker (1980), Klosterman (1985) and Whitehead (1984) are summaries of the market failure cases for land use planning. In their arguments, significant market failures in land use include undersupply of public goods, oversupply of externalities, inequalities in market power, inequalities in initial property wealth endowments, and inequalities in wealth derived from neighborhood public goods.

Facing many early critiques on Pigovian tradition as an "oral tradition", the Pigovian theorization has tried to be more mathematical. In analytical approaches, the proponents of this theoretical paradigm substitute their previous assumptions about the nature of some porudciton

functions (Helpman and Pines, 1977), dwell on the notion of time in their assumption (Baumol, 1972; Fisher and Peterson, 1976; Crone, 1983). Others contest that externality should be considered as dynamic, and emphasize zoning's wealth effects (Goetz and Wofford, 1979). The opponents of the pigovian theses however use "calculus on the blackboard" to attack the pigovian mathematical approach, meaning that their analysis is away from the real world. Besides the analytical approaches, there are primarily three areas of the Pigovian paradigm engendered critiques, which are transaction costs, externalities, incompatibility.

Pigovian theorem's primary weakness is its ignorance of high costs for zoning, namely transaction costs. Transaction costs include all costs except for the costs of physical production, such as public administration costs, compliance costs, opportunity costs from delay or loss in response to markets, costs for incompetent planning decisions, negotiation costs, contract enforcement costs, etc. In many circumstances, those transaction costs can be prohibitively high, while negative externalities are trivial to the society or individuals. The costs of avoiding those externalities by government intervention might far exceed the negative externality costs themselves. To this end, one is lured to measure externalities in one way or another, only find that both definition and assessment are extremely difficult (Lai, 1994).

Pigovian externality arguments tend to mislead the understanding of externalities in the real world. The externality arguments might discourage mixtures of land uses found in inner cities, which engenders social benefits according to Jane Jacobs (1964). Such kind of misunderstanding results in an excessive preference for order in zoning in a way that the order cannot maximize the social welfare of communities. Furthermore, externalities may also be social, cultural, political or lifestyle, which all have important implications for zoning. But how those externalities play in zoning is a question unanswered. Avoiding negative externalities through zoning may yield short-term gains for those immediately affected, but the questions are whether the restrictions on land use and thus urban form, and the controls of built form innovation through zoning lower the quality of the benefits in the long run. A related issue raised by Sorensen (1994) but has rarely been considered for empirical cases is the question that geographical scale matters for externalities. Negative externalities at the local level may be positive externalities at a regional and national level. For instance, locally unwanted land uses (LULUs) are an example in point. The differences in people's socioeconomic situation may affect their response to certain externality impact—one's negative externality might be another's positive externality. In his discussion on social cost, Cheung even argues that externalities are not evidence of inefficient resource allocation (1974). Even for the argument that zoning is the way to minimize externalities, it should be noted that there are many other ways of tackling externalities

including building regulations, nuisance laws, covenants, pollution tax and subsidies, and so forth.

A zone is a class of land use functions and activities. In real world, certain specific functions and activities with a zone may be compatible with some functions and activities in another zone even though these two activities are broadly incompatible. That is why mixed-use is allowed and even encouraged by new urbanism. With the advances of technology, incompatibility in traditional viewpoint can be minimized or even avoided by technology. Some new technologies have made certain commercial or even industrial activities no longer an incompatible to residential. For example, electronic technology innovation has made printing environmentally compatible with residential uses. In addition, many commercials like private clinic are allowed by private covenants. Furthermore, compatibility is not an absolutely scientific concept. In regions or areas where unemployment and poverty are a serious issue, the existence of an incompatible and polluting manufacturing facility or an incompatible commercial complex which generates many job opportunities in a residential neighborhood might be a 'positive' effect for the residents, leaving other benefits like avoiding negative transportation impact and saving time spent due to commuting. Another example about airport and residential uses may illustrate that Pigovian analysis ignores some factors that can internalize social costs. The airport noise incurs social costs for noise mitigation which is borne by the neighborhood residents. However the social costs could be offset by either a lower rent or an increase in employment opportunity (Lai, 1997). Zoning largely denies possible private negotiation and resolution. Therefore, legislative and administrative zoning controls might excessively replace the freedom of individual land lease and covenants. For instance, pollution credits have already been a practice within the US for air pollution. In seeking a model to solve environmental problem worldwide, some World Bank economists are intrigued with the idea of creating an international pollution market where countries can buy and sell pollution rights. The idea that poor countries could raise money from the industrialized West by selling pollution rights is an appealing prospect for some marketists (The Economist, 1992; Cockburn, 1992).

Institutional Economics Theses

In challenging the Pigovian market failure (Pigovian theorization does not completely eliminate the market but corrects it) and government intervention arguments, Ronald Coase in his seminal papers (namely *The Nature of the Firm* in 1937 and *The Problem of Social Cost* in 1960) raises the concept of transaction costs and proposes a libertarian thinking of free market and anti-

government intervention. Using the example of the economic conflict of interest in land use rights between a cattle raiser and a wheat farmer, Coase argues that if transaction costs are zero, both parties can trade their rights to internalize their conflicts. In other words, private contracts can resolve land use conflicts. He shows that administrative separation of land uses by governments to minimize negative externalities is not necessarily socially advantageous. It cannot be assumed that governments would manage land use in a competent way any better than what the market would do. Coase questions the Pigovian efficiency calculus by focusing on the transaction costs of regulative policies. Coase's seminal theory led to the rise of property rights economics (property rights here refer to institutional arrangements that constrain resource competition, while costs of such institutional arrangements are transaction costs as distinct from production costs), and has led to the growth of anti-interventionist and anti-planning thinking in planning, mainly in North America and Europe. In urban planning, this strand of theory has generated the conceptual notions like public failure (Wolf, 1987), state failure (Janicke, 1990), planning failure (Sorensen and Auster, 1989) and market environmentalism (Kwong, 1990). The theory also gained its large audience among political scientists and planners because of the demise of the planned economies, such as the economic reforms towards liberalization in China, and the collapse of the Soviet Union's and the Eastern European communist regimes, which supported the theory and provided evidences for the theoretical debate. During the 1980s, the Thatcho-Reaganite decade saw the rise of embracing and celebration of the market economy. Deregulation, decontrol, privatization, user fees, and market pricing became the new models for delivering public services, replacing the old order of public goods provision (Dyckman, 1983).

The proponents of Coasian anti-interventionist theses generate rich discussions competing with the Pigovian theses. Some of the researchers include Crecine et al. (1967), Siegan (1972), Master et al. (1977), and Fisher (1978, 1980) who are primarily from economic analysis of law perspective; and Mark and Goldberg (1981), Anderson (1982), and Benson (1984), who are from economics perspective. Zoning, as a government intervention approach, is considered useless in increasing efficient land allocation. In a sharp contrast, land use without zoning would achieve more efficient land use. Siegan (1972) uses Houston, the only major city in the North America without zoning as a strong case to support the argument that non-zoning and market driven land use are more efficient. Market solutions are superior for economic efficiency. The impact of the Coasian approach can be clearly felt in planning education and academia. Robert Ellickson's papers on zoning (1973, 1981), David Mills' papers (1989) and the adoption of Williams Fischel's (1987) *The Economics of Zoning Laws* as a text book for zoning are examples. In planning literature, a dichotomy seems to appear where the Pigovian paradigm is one for

zoning and the Coasian paradigm is against zoning. Explanations of planning in social welfare terms associate planning with government intervention, juxtaposing the public sector with the free market.

Social costs may be either greater or less than private costs. When marginal social costs of production are greater than that of the private cost function, a negative externality of production occurs (e.g. pollution), as a result of firms externalising their costs onto a third party in order to reduce their own total cost. As a result of externalising, there is an increased cost of production on society creates a social cost curve that depicts a greater cost than the private cost curve. With respect to cost, there is also an issue of price elasticity of demand, which is a measure of the sensitivity of quantity demanded to changes in price. It measures the relationship as the ratio of percentage changes between quantity demanded of a good and changes in its price. For example, water has inelastic characteristics in that people will pay anything for it, while sugar is elastic because there are many substitutions for sugar.

An important presumption in the Pigovian model is that one party in land use conflicts is assumed guilty and would not come to a private settlement with the other party in the conflicts. However, in reality, this is reactive and forces the victim to seek and negotiate payment from the perpetrator. Coase shows that conflicting interests depend on the cost-benefit comparison of the activities instead of an arbitrary condemnation of one party. In the meanwhile, many activities generate social costs along with social benefits. Government intervention may prevent the cost but at the expense of social benefits. The Coasians argue that since the market can handle externalities only if transaction costs are zero, Pigovian interventionist approach is unnecessary and undesirable. Coase captures Pigou's notion of the distinction between the private and social product, which covers the concept of nuisance in land use and the concept of environmental pollution (1959). He holds that the market can internalize external effects or externalities if transaction costs are zero. When transaction costs exist, in order to minimize the costs, markets are modified in predictable ways through large firms and corporations and institutional governance (not necessarily government intervention) to define and monitor market actors rights. Zoning to Coase himself is purely a kind of direct governmental regulation in order to confine certain types of business to certain districts (1988). In those analysis and evaluation of zoning, Coasians argue that zoning does not improve land use efficiency and zoning is a zero sum game.

Empirical studies support that zoning is unnecessary by using Coasian value regression models which regresses land value against local amenities within a locality with a land use pattern that would produce externalities. Reuter (1973) proposes in his study of Pittsburgh case that externality is controlled efficiently by self-selection in the market and thus does not need

government intervention. Another research is Maser et al.'s study of Rochester, New York, which concludes that zoning is ineffective because the externalities could not be detected in zoned area except the case that zoning is associated with racial segregation (1977). Similar conclusion could also be found in Mark and Goldberg's study of Vancouver Canada (1981). Those findings suggest that many zoning restrictions could be removed without leaving any significant negative impact on land value. In reality, land market forces are too strong for planning officials administering a zoning statute to ignore. Empirical studies show that zoning regulation is constantly being adjusted to accommodate these forces (Stull, 1975). It seems that completely isolating the influence of the market from zoning is not possible. There are a few seemingly contradictory findings by Coasians. For instance, Lafferty and Frech III (1978) in their Boston single family home market case found that certain configurations of land-uses under zoning are efficient in maximizing property values, though this may not be a direct endorsement of zoning because there are alternative means of influencing land uses and zoning introduces costs. Those research demonstrate that zoning does not improve land use efficiency or that zoning is just a zero sum game.

Those studies suggest that the important point is not making a choice between zoning and non-zoning, but the institutions of either zoning or non-zoning (for instance, the institution of exclusive property rights achieved by zoning can also be obtained by zoning alternatives). It may then lead to the critiques of a conventional misperception of an opposing dichotomy of Pigovian approach and Coasian approach. The main misconception about Coase theory is that there is no need for any policy intervention of government. In fact, Coase's real intention is to make the point that where transaction costs are positive, resource allocation is affected by the ways in which rights are assigned and the government play a positive role in influencing resource allocation and delineating property rights by assigning rights. So it is true that Coase considers government as being less efficient than the market, and takes zoning as such an inefficient example. This argument however needs to be taken with his caution that it does not do more than suggest that governmental regulation should be curtailed (rather than completely removed). He states in his argument about pollution: "if many people are harmed and there are several source of pollution, it is more difficult to reach a satisfactory solution through the market...As a practical matter, the market may become too costly to operate. In these circumstances, it may be preferable to impose special regulations, which confine manufacturing establishments to certain districts by zoning" (1959: 29). Government intervention arguments "does not do more than suggest that governmental regulation should be curtailed" (Coase, 1988: 119). The relevant problems are

when to intervene and how to intervene for government to minimize inefficiencies and social inequities and how is the effectiveness of the intervention.

Public Choice Theses

The review of Pigovian and Coasian paradigms does not provide clear answer to the reasons for public choice of land use control. The paradigms offer social and economic justifications for government intervention for social welfare (e.g. externalities) and transaction costs in land markets. Zoning is also a political response to land uses by the motivations behind it. But Coase deftly sidesteps the fundamental political and moral issues about the distribution of power, welfare, and opportunity (Banerjee, 1993). Regarding the question of why society chooses zoning (or non-zoning), Lai (1994) in his review of Coase's theory of institutional economics suggest that it is a question of the nature of public choice in a land use restriction process. Zoning may actually respond to and then reflect the market through the efforts of property owners, developers and stakeholders who would encourage their favored land use regulations (e.g. zoning ordinances) to drive up their property values, as showed in the studies of development controls and greenbelt zoning in the UK by Hall (1973) and Evans (1991). This apparently runs in contradiction to zoning's role for social welfare and transaction costs. Public choice thinkers Downs (1967), Buchanan (1968), Tiebout (1956), Mueller (1989) all question the relationships between markets, governments, and policy makers in the Pigovian social welfare paradigm and emphasize the limitations of conventional welfare economics. The implicit comparison of an incompetent market allocation with an ideal administrative intervention in land resource allocation needs to be challenged. Institutions such as voting and other decision making rules matter. While the social welfare paradigm emphasizes the outcomes, the expenses of the whole policy and political processes have been downplayed.

The issue of zoning as a political response to personal interests in land resource allocation may be more closely relevant to the theory of public choice and its notion of government failure. Any claims for the costs of market failures have to be balanced by an assessment of the costs of government failure (Wolf, 1987; Mills, 1987). Government failures through excessive and incompetent administration generate transaction cost; all transactions between private consumers and public goods incur costs. These may introduce additional inefficiencies. Political concept like constituency is territory based and implies boundary delineation. From historical perspective, the evolution of zoning from a means to protect the individuals collectively within a state to a means to attenuate individuals' rights is consistent with the property rights concept that an institution,

like the planning system, is a result of public choice (Lai, 1997). Public choice theses question the social welfare paradigm by examining the motivations of stakeholders involved in planning regulations. Buchanan (1984) takes zoning as a service provided by the municipalities. Politicians, for the interests more of their political ambitions than of social welfare, then of course want to make the zoning service attractive to potential voters through offering those voters favorable considerations of their suggestions in zoning ordinance making or rezoning process. Regulations promote or preserve the power of bureaucracies. As for the planning profession in the bureaucratic system, Dunelavy's (1991) empirical study shows that for high-ranking bureaucrats seeking a leadership role, zoning rules that offer administrative and negotiation powers and place planning commissions and departments as a lead player in municipal affairs are highly desirable for their personal political interests. In this sense, zoning preserves and promotes the power of bureaucracies, which significantly consume public resources. Zoning is vulnerable to local politics. Some of the facts about political special interest intervention include bargaining, dealing, NIMBYism, administrative discretion and delays (Babcock and Siemon, 1985). Such vulnerability may result in lax enforcement of zoning, plans and zoning amendments under political pressure. Zoning then may not be able to offer consistency and sense of security as alternatives like private covenants, conditions, and restrictions to zoning provide in a form of private contract along with expensive litigation for the breaches.

Property owners are the most important voters for whom property values and economic and social benefits of their properties are their direct concerns of their neighborhoods. Land use restrictions like zoning regulations offer those neighborhoods the possibilities of operating in the forms of neighborhood civic clubs, homeowners associations or community organizations to press zoning regulations to protect property values and maintain good neighborhood amenities. Zoning would assure those potential future owners in the neighborhoods share the same values and appreciate the same neighborhood characters of current property owners who press the zoning. Thus, together with politicians, bureaucrats, developers, speculators, homeowners also use zoning as a means to meet their special interests. Zoning are the rules agreed on by those interest groups to maintain their status quo and maximize their rewards. Public choice theory therefore provides an analytical approach to zoning institutions and behaviors. It breaks the economic-political boundary and looks at how different actors in the land development process may behave. The theory seeks to address the question of society's choice of alternative systems of land use, ownership, compensation—different groups' preferences for different approaches for development controls. Citizen's demands for alternative policies, laws and regulations may be addressed by public choice theory.

The real world described by Coase and by public choice theory is in fact closer to the understanding of zoning as an economic and political planning tool than the Pigovian social welfare. The Pigovian theses do not provide theory of public and private action motivations. A large part of the literature on zoning assumes that optimal regulations are imposed, but does not address the question of whether participants (bureaucrats, planners, developers, and residents, etc.) have incentive to follow the optimal rules (Pogodzinski and Sass, 1990). Governments, and bureaucrats, planners all have their individual and career interests that motivate their behavior in zoning. Private and social benefits can coincide and political incentives may emphasize such coincidences. Private motives might result in socially beneficial outcomes. Yet, this is not always and there are also cases that the two diverge.

Market Supported Planning and Contractual Zoning

Alexander (2001) uses transaction cost theory to categorize different forms and agents of governance in land development process and property market (Table 1). Planning and development controls take various forms. At the planning domain, there are administrative supported third-party governance and market supported bilateral governance. In the third-party governance model, government agents conduct statutory public planning, or sometimes delegate the tasks to professional consulting firms. In other words, a statutory system of public planning does not mean it all has to be done by public agencies, there is outsourcing of public planning. In the bilateral governance model, planning involves both or either governmental and private agents in a variety of combinations. Planning may involve government agencies, public-private partnerships (public/private mixed agents), and/or private agents such as firms, corporations, households, etc.). The private agents may conduct developer-initiated planning or informal planning. Statutory planning is a form of third-party governance linked to development control as mandated market regulation. The public planning under bilateral governance is not control and regulation of the market but intervention in the market, with government as landowner-developer and its related planning tasks.

Table 1: Forms and Agents of Governance in the Land Development Process and Property Market (Source: Alexander, 2001).

	<i>Third-party governance (administrative support)</i>		<i>Public/government agents</i>	<i>Bilateral governance (market support)</i>	
	<i>Public/government agents</i>	<i>Private agents (delegated)</i>		<i>Mixed agents (public/private)</i>	<i>Private agents (firms, corporations, households)</i>
PLANNING	Statutory public planning (government agencies, bureau)	Professional consultant firms	Public developer- planner (government/ public agencies) Indicative planning: (public planner and/or delegated consultants)	Public-private partnerships	Developer- initiated planning Informal planning
DEVELOPMENT CONTROL	Regulatory: (government/ public agency) zoning, building regulations, other (environmental, hazard, special area designation,		infrastructure, public facilities/ open space, indicative designation of private land uses/intensities Contract zoning: plan as condition of contract of lease or sale between public landowner and developer		Contractual CCGs between developer/ planning agent and subsequent property owners

At the development control and zoning level, third-party governance leads to regulatory development control in the forms of zoning, growth controls, building regulations, and others like environmental regulations, hazard mitigation and special area designation, and so forth. Some researchers take the British planning regime as a system that has no zoning elements, except for a few enterprise zones, in the sense that all development except a few exempted classes of uses within the Council district, other than some special zones, must go through the development application procedure (Ball and Bell, 1991). Since the development rights nationalization in 1947, the zoning plan had gradually become a local structure development plan system where all development proposals are reviewed on their individual merits-a development control system.

This type of land use control can be included in the broad concept of zoning regarding boundary delineation because each local planning area can be seen as one zone within which all development goes through the development control process (Lai, 1997). In the British planning system, zones are created without prescribed prior uses. Forward planning elements are implicit, with the appearance of the lack of zoning. Besides the special form of British statutory zoning, statutory zoning imposed by planners is widely applied to most zoning system in the world including the US.

The market supported bilateral governance takes two forms depending on the parties involved. When the state is the landowner, the public landowner writes the plan requirements into the land lease contract with the private agents. The Netherlands, Israel and Hong Kong adopt this contract zoning. Zoning by contract in Hong Kong has been in practice since 1842 where lands with restrictive covenants or lease conditions put on by the local authority are allocated as leasehold lots by auction, tender, or grant to individual (urban land reforms in China adopted Hong Kong's leasehold system with some changes, China makes zoning plan or "detailed regulatory plan" before any land contracts between the government and individuals are possible.) The lease is a civil contract between the government and the property owners. Renegotiation for lease modification between the government and the individuals is possible. When the planner-landowner is a private developer, development control takes the form of contractual covenants and deed restrictions. Such contractual obligations put restrictions on land development can be made by private individuals and then the contracts are enforceable by the government. Houston is a case in point (Siegan, 1972). Houston lands are controlled by private covenants, subdivision regulations, and building code.

Contractual zoning may also exist before the inception of statutory zoning. When zoning ordinances were adopted by municipalities for the first time, zoning prescription may or may not be the same as the existing land uses, the state-imposed uses and other restrictions followed the pre-existing ones. Zoning took into account of the existing boundaries delineated by the property owners. Zoning restrictions on land use, development intensity, and development boundary are implemented in the land development control process. In this process, the land owners' freedom in their property rights is superseded by government determination, and thus their private property rights are attenuated by government specified measures. Their rights to use and derive income from land can be attenuated by a series of restrictions on the scale and intensity of land uses. Their rights to alienate land can be attenuated by requirement of joint development with the property of other owners or simply attenuated by restrictions over land subdivision.

Land allocation with restrictive covenants and possible subsequent permission to change use is a scenario of initial assignment of property rights by zoning by contract (with government or among individuals, like Hong Kong and Houston respectively) and subsequent change of rights driven by the market. This may be an ideal scenario proposed by Coase. Similar concepts include saleable zoning (Nelson, 1977; Fishel, 1979) and the auction of zoning or development rights (Mills, 1989). Saleable zoning allows restrictions on land use, intensity and boundary of development to be settled by contract (enforceable by the state) rather than statutory regulations.

The zoning controls range from contractual approaches to statutory approaches. All the variants of zoning achieve different degrees of property rights attenuation. Therefore, it would be more meaningful to explore different types of zoning with different degrees of land right attenuation than to argue about either zoning or ‘non-zoning’.

Review of Empirical Literature on Zoning and Its Alternatives

The section review of empirical findings includes research on zoning as a legal instrument and as an institutional device, alternatives to zoning (including those comparative studies for zoned and unzoned cities), land use controls and neighborhood diversity, urban form and land use controls, and urban form measurements. The review aims to provide a current understanding of zoning (and its alternatives), urban form, neighborhood land use planning and their complicated relationships. The dissertation research structure and specific research questions will be drawn from the review.

Zoning as a Legal Instrument

Local land use regulations include zoning and other planning requirements such as building codes, subdivision ordinances, and development fees. Zoning regulations were adopted as the first generation land use controls in contrast to the second generation restrictions on land use that focus on state level growth management and planning mandates (Navarro and Carson, 1991). The historical roots of land use planning can be traced back to the early 20th century when planning commissions were created and zoning regulations were established through the American City Planning Institute (Catanese, 1979). The establishment of planners as a profession made the first generation of land use regulation widely accepted functions and brought zoning as a new and important planning tool. *The Standard State Zoning Enabling Act*, published in 1924 by the Department of Commerce, became a model for the states to legislate their own zoning

ordinances. Although not a legal reason, zoning advocates justify zoning as the necessity for protecting and even enhancing commercial and residential property values. The traditional arguments can be traced back to the nation's first zoning ordinance in New York and later in Chicago. Much of the impetus of New York's 1916 zoning ordinance came from Fifth Avenue retailers' efforts to stop the encroachment of the garment industry's buildings in Manhattan. In Chicago, the proponents of the first zoning ordinance argued that eliminating objectionable land use and other negative externalities would raise property values by one billion dollars over 25 years (Babcock, 1966). Local zoning regulations originated in cities nationwide during the 1920s and 1930s. For many years, zoning was the dominant form of land use control. After the existence of zoning for decades, empirical evidence has not been clear enough to support the rationale that zoning enhances property values, though zoning works well to steer land use with negative externalities to sites where they do least harm (Steele, 1987; Fischel, 1990; McMillen and McDonald, 1993).

Zoning is taken as a comprehensive planning tool aiming at improving a city's social and physical conditions. Advocates state that zoning shall conform to a comprehensive plan with a broader scope than the zoning scheme; otherwise zoning ordinance lacks coherence and discipline in the pursuit for goals of public welfare (Babcock, 1966; Nelson, 1977). Although planning may be desirable, planning may be just as arbitrary and irrational as zoning (Babcock, 1966). In most communities, zoning is driven by political interests instead of by professional comprehensive planning (Rose, 1985). In the cases of mega urban project development, zoning often plays a minor role among the array of planning tools such as cofinancing, grants and tax incentive programs, special districts, negotiated development, and linkage exactions (Malloy, 1987; Weiss, 1992). There is even a suggestion that zoning is not a necessary component of successful urban planning (Siegan, 1972). Free market conservatives favoring limited government intervention are likely to make this argument as zoning implies more regulation. However, the argument has been challenged, because it does not count land use externalities and spillovers (Ellickson, 1973; Fischel, 1985), and thus an analysis of zoning based only on market values is deeply flawed (Karkkainen, 1994). Zoning protects values that only partially captured in market values rather than protecting land market values.

Zoning tends to treat property owners with different ways. Zoning in some cases has beneficial outcomes such as controlling nuisances. But it might result in uncompensated taking of private property in violation of constitutional principles and fundamental norms of fairness (Epsten, 1985). Zoning reduces some property values while raising others; it may in some forms effectively allow current homeowners to skim off developers' profits, violating principles of

horizontal equity. Therefore, political process of zoning is biased in favor of local property owners (Ellickson, 1990). More radical economic critiques suggest that zoning provides no benefit to homeowners, or that such benefits are isolated, fortuitous, and incidental results of a fundamentally misconceived regulatory scheme (McMillen and McDonald, 1993). The benefit to homeowners does not justify the harm to would-be developers, even if the benefit to homeowners outweighs the harm to would-be developers (Karkkainen, 1994).

The exclusionary effect of zoning is well documented as zoning ordinance's intended or unintended purposes of excluding racial groups, economics classes and economic activities. The exclusionary is a much more serious issue in suburban areas, partly because big cities tend to be less exclusionary (Nelson, 1977), and partly because new land use decisions with the largest sizes and largest investment often are made in suburban areas where zoning has been seen as an important planning tool (Fischel, 1990). Karkkainen (1994) argues that racial and economic class exclusion should be addressed by constitutional and statutory equal protection claims instead of scrapping zoning because constitutional doctrine gives little protection against classifications based on economic status which is strongly correlated with race.

Zoning as an Institutional Device

The institutions and practices of zoning vary from city to city. There are nevertheless common characteristics among all zoning ordinances. Posner (1992) explains two types of zoning: separation-of-use zoning divides zones and permits only certain land uses in each zone, so that there are separate zones for high-rise apartments, single family homes, for commercial, for industries, and so on. Exclusionary zoning, the second type of zoning, tries to exclude certain uses altogether through devices like bans on multifamily housing, lot size and width, building sizes, density and so on. In fact, as Silver (1997) argues about early zoning practice, southern cities were implementing racial zoning ordinances even before separation-of-use zoning was invented, and when the black population spread outside the South, the exclusionary zoning spread with it. Silver (1997:27) writes "the racial zoning...is a central feature of American planning history". The movement of zoning and limitations on immigration occurred at the same historical moment (Perin, 1997). The nation's first modern zoning ordinance in New York in 1916 made it clear that the motivation for zoning has been as much about the segregation of land users as the segregation of land uses (Toll, 1969).

After analyzing several hundred new city formations from 1950 to 1990, Burns (1994) concludes that the ability to zone in order to meet the exclusion demand has provided the impetus

for the incorporation of new cities. City formations were partly encouraged by the white so that the new city could provide exclusionary zoning. Although there were also financial motivations for the formation of homogeneous cities, “the evidence suggests that the operative concern here was race and not simply the low-income population” (Burns, 1994, p. 91). In this case, zoning has been used as an institutional device. In response to exclusionary zoning, after a judicial attack on zoning in the law case of *Mount Laurel v. NAACP* by New Jersey Supreme Court, the open suburbs movement in New Jersey in the 1970s required each community in the state to rezone to accommodate its share of low-income homes. However, the movement’s impact on the practice of exclusionary zoning has been negligible (Briffault, 1990). More recently, zoning has been under a postmodernist attack: the ideal of a culturally diverse network of urban life is impeded by separation-of-use zoning (Young, 1990).

At the local level the residents can choose from different municipalities which offer various bundles of taxes and public goods. According to Tiebout (1956), the citizens reveal their preferences in choosing their residential locations. The citizens cannot avoid revealing their preferences in a spatial economy. The importance of zoning in the Tiebout model was demonstrated by Hamilton (1975). He argues that exclusionary zoning can salvage the efficiency properties of the Tiebout model by promoting homogeneity of housing within a neighborhood, the property tax is then turned into a benefits tax, which provides the marginal-cost pricing mechanism required by the model. In Tiebout model, spatial mobility must be conditioned on the local service affordability. Exclusionary zoning has been an institution that restricts residents’ spatial mobility. In addition to those politically and economically powerful residents, politically well connected developers are often able to win zoning changes as they need through campaign contributions to key decision-makers, large fees to politically-connected attorneys, outright bribes, and personal relationships with elected officials, politicians and professionals (Krasnowiecki, 1980; Fischel, 1985). In this regard, zoning is more political than professional.

The study of zoning describes land use controls as exclusionary, elitist and status-biased (Molotch, 1976; Logan and Molotch, 1987; Bollens, 1990; Donovan and Neiman, 1992). The social class hypothesis argues that higher income and higher educational attainment levels are more likely to practice strict land use controls and thus form homogeneous communities with better amenities and higher life quality (Feiock, 2004). Moreover, political fragmentation favored by small local governments undermines the overall land use controls. Through the formation of new local governments as residents attempt to gain a greater degree of autonomy, a community can regulate land use and control the rate and composition of new development within its boundaries (Lewis, 1996). Communities then draw on zoning and other land use controls to

enforce their preferences for suburban single family housing. Community-based land use regulation may create increased growth and congestion in other areas by locating new development outside those communities (Fischel, 1985; Downs, 1999). Therefore, community land use physical patterns are reinforced by political institutions at community levels, or political fragmentation. There is mismatch between the local land use regulation and larger scale (e.g. regional) attempts under a decentralized land use governance (Bollens, 1993). The more fragmented the institutional setting of a region, the less the overall consistency of land use regulation in a city (Carruthers, 2002). Carruthers uses per capita municipalities and per capita special districts to measure political fragmentation. He found that political fragmentation is associated with lower urban densities, higher property values, and lesser amounts of urbanized land. In contrast, central city and counties with consolidated city-county governments are denser, contain greater amounts of urbanized land, and have lower property values.

Both as a legal instrument and institutional device, zoning should not be understood as a tool of purely scientific and professional urban planning because politics, partisan composition (e.g. the ideology of the Democratic Party has been more supportive of regulation and government intervention in markets) and vision differences among city politicians, planning professionals and neighborhood residents might be significant (Talen, 2005). Therefore, ideal zoning has to accommodate individual variances, neighborhood diversity, changes over time, and periodic comprehensive updates.

Alternatives to Zoning

Laissez-faire states appreciate a political culture that supports the limited public policy instruments and considerable private land development decision making. Many communities in those states implement land use plans with little or no zoning or subdivision regulations (Kaiser et al., 1995). Advocates of land use controls with mandatory government regulations criticize that those communities are ineffective in preserving natural resources, containing urban sprawl, and mitigating losses from hazardous events (French and Nelson, 1996; Burby et al., 1998; Knaap and Nelson, 1992; Nelson and Duncan, 1995).

Alternatives to zoning include covenants, nuisance rules, and fines as land use controls (Ellickson, 1973). Deed restrictions, or restrictive covenants, are used in addition to zoning in order to for those homeowners to achieve more restrictive land use controls than those specified in zoning ordinances. For cities without zoning, deed restrictions become the most important mechanism for land use controls. They are private agreements and are binding upon every owner

in a subdivision. All future owners have to agree to the items in deed restrictions when they purchase properties in those subdivisions. The main purpose of deed restrictions is to keep commercial and industrial land uses away from residential uses. Most deed restrictions are valid for a certain period of time (e.g. 25 to 30 years in Houston) with a provision for automatic renewal unless otherwise prevented, or renewed by written approval of a certain percent of property owners. As a private contract, the conditions of deed restrictions vary from neighborhood to neighborhood. Landowners must be convinced to enter into deed restrictions voluntarily (Fischel, 1985). In most cases, subdivision residents establish homeowner associations and contribute to those associations financially in order to monitor and enforce the private covenants.

Several legal institutions empower the local government to enforce private deed restrictions as an alternative to zoning to realize land use control (Henderson, 1987). For instance, according to the Restrictive Covenant Enforcement Acts of Texas (1965), communities were allowed to sue to enforce deed restrictions when a land use restriction was violated and it threatened a neighborhood's residential characteristics. Municipalities may assist neighborhood organizations to enforce deed restrictions. However, many deed restriction violations cannot be covered by municipal enforcements (Berry, 2001). Under the Acts, building permits can be denied for projects that do not comply with deed restrictions on use, setback requirements, lot sizes, type and number of buildings. Through the denial of building permits, cities can deny new projects that would violate deed restrictions. Homeowner associations monitor and enforce those deed restriction provisions that are not covered by the Acts.

There are a few studies that compare the cities with zoning ordinances with those that without zoning, on housing price, land prices, and residential segregation. Siegan (1972) argues that the market-place provides economic incentives for land use separation similar to what is found under zoning. However, he did find that the price for multifamily housing is different between zoned and unzoned cities when he compared Dallas with Houston. To Siegan, Houston established a strong case that zoning is the major factor accountable for the multifamily housing price differences. Fischel (1985), however, attributes the reasons to nuisances that zoning would have prevented as "we so often concentrate on zoning as excessively raising the price of housing that we forget that housing might be priced too low if it is devalued by the threat of uncompensated nuisances" (p. 233). Furman's (1982) study of housing price in Houston finds that properties, mostly single family houses, under deed restrictions carry price premiums over those properties that are not covered by any deed restrictions.

Peiser (1981) studied two pro-development cities Houston and Dallas and found that land development in Dallas is more likely to be adjacent to existing subdivisions than in Houston. Thus land prices reflected the narrower choice in Dallas, which led to higher land prices in the city. Unlike zoning, subdivision restrictions do not protect property owners against undesirable land use change adjacent that is not covered by their deed restrictions. Such loss of control concerning adjacent land uses that may lower the values of deed restriction-protected properties exposes the weakness of the absence of zoning in Houston. For land development, the benefits of the absence of zoning may extend beyond the time and cost savings of the zoning process itself. Land use is more flexible and can respond more quickly to the market than in zoned cities. The regulatory schemes place more incentive for developers in Houston, while the density of development and its interconnection with existing utilities is more controlled in Dallas. Another more recent study examined the developer's decision about density of development at the disaggregated, subdivision level, and the relative influence of zoning rules versus market forces (McConnell et al., 2006). It found that both zoning rules and economic variables are important in determining density. The study argued that the subdivisions constrained by the lowest density limits would have been nearly 50% denser absent any zoning regulations.

In a comparative study regarding residential zoning, Berry (2001) concludes that there are other methods of land use control that can produce similar results in the absence of zoning, that is, deed restrictions in Houston achieve what zoning achieves in Dallas. In other words, zoning simply does not matter, at least for residential segregation. If racial homogeneity is valued by some homeowners, they would compensate developers for not building undesirable housing through higher prices for covenant-restricted properties. If the use of land for multifamily housing were more valuable, developers might compensate neighboring homeowners in effect purchasing the right. Zoning-like outcomes are produced through private market exchanges of property rights (Berry, 2001). However, because zoning is established through legal and political process, developers cannot compensate neighboring homeowners for the right of building multifamily housing due to the high cost of reallocating zoning entitlements. Berry even proposes a hypothesis that residential segregation is attributable more to the use of private covenants than to zoning, but there is no empirical evidence to test this hypothesis.

Abolishing zoning would not necessarily effect a cure to exclusionary zoning outcomes (Marks, 1994; Fischel, 1990); private tools like deed restrictions will have similar goal of exclusion (Berry, 2001) through purchases of large private tracts of land, or developments on large lots enforced by informal social norms (Heilbrum, 1987; O'Sullivan, 1996). However, private covenants are likely to be effective only in undeveloped areas where they are imposed as

part of the subdivision of a large parcel because the cost of getting all residents to agree to deed restrictions is very high (Ellickson, 1990). NIMBY also excludes legal but locally undesirable land uses from those politically powerful residents' communities. The political power is often correlated with racial and socio-economic status in such a way that lower income and minority communities have to suffer undesirable land uses like waste disposal sites, homeless shelters, drug and alcohol treatment centers, and even landfills and incinerators (Been, 1993; Bright, 1992, 2000). The political dynamic of NIMBY is not necessary co-extensive with zoning: cities without zoning like Houston has its share of NIMBY-like land use patterns because market forces play a greater role than sitting decisions (Been, 1994).

Land Use Controls and Neighborhood Diversity

Classic works have criticized zoning which is considered as a barrier to diversity. Lewis Mumford argued that the mechanisms largely put into place with the help of planners—zoning—had reduced the city's capacity to foster its primary function of human exchange—"the maximum interplay of capacities and functions (Mumford, 1949: 38). From sociological perspective, zoning stifles the diversity of land uses and segregates land use types in neighborhoods; and it distorts the natural land use allocation, which is harmful to economic innovation and growth, as well as to the flowering of culture and the natural pleasure of urban life (Jacobs, 1961).

More recently, out of the classic works on the critical importance of biodiversity (Wilson, 1988), planners have drawn increasingly stronger connections between the diversity of plant and animal species and the need to foster a heterogeneous human pattern. It is through diversity that pluralist societies, defined as "heterogeneous groups within a space" achieve unity (Steiner, 2002: 34). A recent American Planning Association publication *Codifying New Urbanism: How to Reform Municipal Land Development Regulations* (2004) makes link between diversity and zoning explicitly. Mixed use zones are called for various uses, building types and densities and even mixed use within an individual building. However, most theories of land use patterns pertain to segregation rather than diversity (Talen, 2005). Economists have argued that social mix is actually a theoretical impossibility, and that "even with elimination of all institutional practices that hinder spatial integration, market-based factors would still drive some forms of spatial segregation in a metropolitan area" (Wassmer, 2001: 2). In addition, sociologists have theorized that social homogeneity strengthens social support networks, helps protect against discrimination, and helps to preserve cultural heritage (Suttles, 1972). Grant's (2002) study of "mixed use in

theory and practice” concluded that mixed use promises much but delivers little as it operates amidst “social and economic forces” that promote land use separation (p.71).

The physical form of diverse places has been studied by Nyden et al. (1998). They found that physical factors contribute stable diverse neighborhoods include attractive physical characteristics, access to public transportation and employment, economic activity diversity, housing stock variety, proximity to downtown, and the existence of “social seams” in the form of schools, parks, or a strip of neighborhood stores. Rather than a result of deliberate policy intervention, some neighborhoods are diverse because of underlying social and economic processes that allowed a mix but stopped short of complete displacement. It is also important to investigate the places that are already diverse and work to sustain them. As Rowley concluded, “we must treasure mixed-use diversity wherever we find it” as a way of counter-balancing inauthentic, new mixed-use developments that are only “a very pale imitation of the genuine article” (Rowley, 1996: 95). There are connections between physical form, zoning and neighborhood diversity but that understanding them will require an acknowledgement that the connections are worth figuring out.

Urban Form and Land Use Controls

Urban form generally refers to the spatial configuration and patterns of land use. Urban form has both morphological and functional characteristics. Morphological arrangement refers to physical and spatial patterns of a place, such as building design, style, density and variation. Functional arrangement refers to the spatial zoning and land allocation (Van Diepen and Voogd, 2001). Morphological and functional characteristics of urban form are integral. Urban forms that are accompanied by more sustainable practices are labeled as “sustainable urban forms” (Breheny, 1992; Anderson and Kanaroglou, 1996; Jenks et al., 1996; Banister et al., 1997). Urban form points at the extent of sustainability of land use control effects, either from public sector agencies or from private sectors agreements that correspond to the morphology and functionality of the built environment. With this perspective, it is necessary to study the relationship between land use controls and types of urban form—a hypothetical causal relationship could be established between land use controls and urban form. From planning perspective, the relation between land use controls and urban form is complicated as it relates to questions about private and public costs, social relationships, and economic and political feasibility. Moreover, urban form is a dynamic process which evolves over time as the outcome of changing land use policies

and agreements. Changes in physical form are sometimes a necessary precondition for urban economic, social, and ecological change, while sometimes an outcome of them.

There is an extended body of literature that mentions the complexity of the mutual relationships between urban form and sustainable land use (McLaren, 1992; Owens, 1992, 1995; Breheny, 1992; Jenks et al., 1996). There are transportation studies that attempt to measuring urban form by density, service levels, public transport (Huigen, 1986; Newman and Kenworthy, 1989, 1992; Banister, 1992), urban size (Breheny, 1995), local facility provision (Farthing et al., 1996), open space amount (Banister et al., 1997), diversity (Cervero and Kockelman, 1997), mixed land use, and presence of sidewalks (Kitmura et al., 1997).

Much of urban form research has been focused on a design perspective; response among social scientists has been limited and unproductive, both from practical issues and theoretical debates. However, any change of urban form implies a sociology and a politics. A superficial environmental determinism often fails to respond to the issues of social equity related to the structural connections between the organization of urban space and the patterns of class and race in society (Lefebvre, 1991; Gottdiener, 1985; Zukin, 1991; Smith, 1996). Healey's (1992) collaborative planning approach implies that in order to make land use planning more sustainable, investigation is called for the relationships between land users and their surrounding environment, which evolves as an outcome of planning decisions made by residential individuals, neighborhood organizations, business groups and public sectors agencies. Recently, urban sociology has focused on the relationship between urban form and the patterns of social inequality of race, class, and gender. There is work that links place to the social and economic structuring of regions (Dreier, Mollenkopf and Swanstrom, 2001). There is also research exploring the implications of demographic changes in the suburbs of the last couple of decades (Patillo-MaCoy, 1999; Haynes, 2001; Rubinowitz and Rosenbaum, 2000).

Conventional planning has focused on functions, mitigating the externalities resulting from market-driven patterns by separating land uses into zones. Traditional neighborhood design focuses on the form in which uses are assembled and ways that proximity and a mix of uses can generate positive effects as a result of qualities of form (Brain, 2005). Urban form built by both types of design is a value proposition that has to do with social and political relationships. Every level of the complicated institutional matrix determines urban form: from federal policy to local land use regulation, from the practices of planning and design professions to the routines of developers, bankers, transportation engineers, regulators, and builders; from the interests of elected officials to the habits of homebuyers and citizens (Logan and Molotch, 1987, Fisher, 1989; Kirby and Lynch, 1987; Brain, 2005).

Empirical Research on Houston's Contractual Zoning

Houston adopts a laissez faire economic and urban development policy. The government only provides basic services like courts, police, fire prevention, infrastructure and sewage funded mainly by property tax. Statutory planning legislation controlling land use is virtually absent. There is no statutory zoning system. Therefore, the pattern of land uses is determined by profit motives and business decisions. Land uses are changeable at will of the land owners, subject to restrictive covenants attached to the titles. Basic forms of planning control however exists in the forms of a government run infrastructure system, privately imposed restrictive covenants in first granted freehold titles enforced by government, and subdivision controls for new development.

Both Houston's pro-growth economic environment and minimal government intervention political environment have fascinated scholars. In spite of city's status of "non-zoning", relatively little has been written about land use in Houston. Real estate lawyer Bernard Siegan's *Land Use Without Zoning* (1972) remains the definitive document on Houston's "non-zoning". According to Siegan, the market-place provides economic incentives for segregation of uses and produces patterns of development similar to what is found under zoning. As he put it, "economic forces tend to make for a separation of uses even without zoning" (Siegan, 1972: 75). Siegan also sets forth the argument of Houston's unplanned, unregulated development in a set of articles defending the City's refusal to enact a zoning code. He asserts that land use regulation in Houston is extremely modest when compared to what is contained in most zoning ordinances because Houston has no ordinance that sets forth specific restrictions on the uses that may be established on any property. More recent studies address Houston from different perspectives such as urban geography (Kirby and Lynch, 1987; Shelton, 1989; Vojnovic 2003), political science (Gainsborough, 2001), public policy (Fisher, 1989) and legal and economics (Berry, 2001), but few from land use planning. For instance, the most recent research on Houston is from urban governance perspective (Vojnovic, 2003) where the political and social forces that have shaped local governance is explored. It employs two theoretical interpretations--the public choice and political economy in explaining Houston's governance and public policy directions, and concludes that the new directions in Houston's policy are a reflection of a different growth strategy reflecting changing demographics and diversifying economy. Gainsborough's (2001) research explores the politics of regional cooperation in Houston, focusing in particular on the role of the state in facilitating or inhibiting metropolitan-wide approaches to urban problems. Gainsborough argues that while generous annexation rules have facilitated regionalism in Houston, these rules are themselves only as powerful as the political consensus to use and

maintain them. Regionalism in Houston is more often defined in terms of systems maintenance functions rather than lifestyle functions. In addition, urban sociologists often portray Houston as an archetype free enterprise, capitalist, or laissez-faire city (Feagin, 1998; Lamare, 1998; Lin, 1995). All those previous studies provide solid background and politico-economic context for this research on Houston's land use planning approaches in the lack of zoning regulation.

There are a few comparative studies that compare the cities with zoning ordinances with Houston, on housing prices, land prices, and residential segregation. Siegan (1972) argues that the market-place provides economic incentives for land use separation similar to what is found under zoning. However, he did find that the price for multifamily housing is different between zoned and unzoned cities when he compared Dallas with Houston. To Siegan, Houston established a strong case that zoning is the major factor accountable for the multifamily housing price differences. Fischel (1987), however, attributes the reasons to nuisances that zoning would have prevented as "we so often concentrate on zoning as excessively raising the price of housing that we forget that housing might be priced too low if it is devalued by the threat of uncompensated nuisances" (p. 233). Furman's (1982) study of housing price in Houston finds that properties, mostly single family houses, under deed restrictions carry price premiums over those properties that are not covered by any deed restrictions. A careful study of single family house prices for 1978 in Bellaire, West University Place (two small zoned municipalities that are completely surrounded by the city of Houston), and Houston by Speyrer (1989) showed that owners paid 7.0 percent more for houses in areas with zoning compared to areas without zoning or deed restrictions. Houses in areas with effective deed restrictions sold for 8.7 percent more than houses in areas without zoning or deed restrictions, while difference between the 7.0 percent and the 8.7 percent premiums was not significant. It shows that deed restrictions effectively protect rich neighborhood by maintaining their higher property values.

Peiser (1981) studied two pro-development cities Houston and Dallas and found that land development in Dallas is more likely to be adjacent to existing subdivisions than in Houston. Thus land prices reflected the narrower choice in Dallas, which led to higher land prices in the city. Unlike zoning, subdivision restrictions do not protect property owners against undesirable land use change adjacent that is not covered by their deed restrictions. Such loss of control concerning adjacent land uses that may lower the values of deed restriction protected properties exposes the weakness of the absence of zoning in Houston. For land development, the benefits of the absence of zoning may extend beyond the time and cost savings of the zoning process itself. Land use is more flexible and can respond more quickly to the market than in zoned cities. The regulatory schemes place more incentive for developers in Houston, while the density of

development and its interconnection with existing utilities is more controlled in Dallas. Another more recent study examined the developer's decision about density of development at the disaggregated, subdivision level, and the relative influence of zoning rules versus market forces (McConnell et al., 2006), it found that both zoning rules and economic variables are important in determining density. The study argued that the subdivisions constrained by the lowest density limits would have been nearly 50% denser absent any zoning regulations.

After a comparative study regarding zoning and residential, Berry (2001) concludes that there are other methods of land use control that can produce similar results in the absence of zoning, that is, deed restrictions in Houston achieve what zoning achieves in Dallas. In other words, zoning simply does not matter, at least for residential segregation. If racial homogeneity is valued by some homeowners, they would compensate developers for not building undesirable housing through higher prices for covenant-restricted properties. If the use of land for multifamily housing were more valuable, developers might compensate neighboring homeowners in effect purchasing the right. Zoning-like outcomes are produced through private market exchanges of property rights (Berry, 2001). However, because zoning is established through legal and political process, developers cannot compensate neighboring homeowners for the right of building multifamily housing due to the high cost of reallocating zoning entitlements. Berry even proposes a hypothesis that residential segregation is attributable more to the use of private covenants than to zoning, but there is no empirical evidence to test this hypothesis.

Towards an Institutional Economic Conceptual Framework

The process of land development and the transformation of built environment can be understood as a sequence of complicated transactions, mainly include property rights transfers and procurements. For research on land development controls, robust analytical methodologies are required to examine the outcome and process of alternative tools of development controls, and understand how policies impact urban development processes. One of the most important strands of theory is to analyze land use regulation using a property rights paradigm. Coasian and public choice analysis of zoning is an example of this analytical approach. It focuses on the allocation of property rights rather than the allocation of productive resources. Zoning can be conceptualized as a form of property rights, an assignment of restrictive rights over private property. A property rights paradigm provides a framework for analyzing allocative and process efficiency in land resource management. The public choice theses apply the rules of microeconomics to analyze the efficiency of alternative property rights, policies and institutions. The section aims to integrate the

three theoretical paradigms on land use zoning to propose a conceptual framework for contractual zoning under private agreement.

Each case study only relates to a particular geographical area and the findings only reflect the time period of that study, while the market condition and the performance of zoning might change over time. The Coasian and public choice theories imply that when geography, time, the environment, local politics and life style choices are added to the debate about zoning, it is difficult to decide what, when, where, who and how to control land use. There is, therefore, no general conclusion to the merit of zoning debate. Instead, the debate on zoning has to be case specific, context specific, locality specific as individual cases because local geographical, political, social, and economic conditions are significantly variable. In practice, various forms of land use regulations and their relevant public regulations are required to facilitate land development. From political perspective, zoning has broad meaning which includes all spatial arrangements in a polity. Broader understanding of zoning therefore implies a special polity (Lai, 1994, 1997). To this end, the relevant question might be why the society chooses a specific land zoning system and what the political and socioeconomic reasons behind such option are.

Some ideas of the theoretical paradigms can be integrated, with a plausible continuum of zoning ranging from statutory zoning with pre-specified uses, zoning without pre-specified uses, to contractual zoning by private agreement instead of the conventional understanding of zoning as bipolarity (i.e. zoning or non-zoning). When one reconsiders the Pigovian approach in which zoning is used to correct market failure in order to internalize externalities and the Coasian approach in which zoning is adopted to reduce transaction costs in land market, a better understanding of the two might be the distinction between public planning by government and private planning by non-government in the market, instead of a distinction between free market and government intervention. The distinction between planning and market in the planning field is misleading as Sowell argues “every economic activity under every conceivable form of society has been planned. What differs are the decision making units that do the planning....[Government planning] is the forcible superseding of other people’s plans by government officials (Sowell, 1980 as quoted in Kwong 1990: 55). It is possible public planning and private planning coexist, and then the critical question to ask is how they coexist and to what extent they get involved in land use boundary delineation. To address those questions, an investigation of institutional design in different land use control system becomes necessary. There is the complementarity between government, civil society, and the market under the overarching concept of governance (Sanyal, 2002; Healey, 1998). This demands detailed analysis of the relevant interacting agents, identifying their critical characteristics and results.

There is a need to explore the rules or workings of development controls of private contractual zoning, in which government and private sector interface. Contractual zoning can be understood as a property rights activity and a direct coordinating activity. This is particularly intriguing when planning co-exists with the private sector market place. Under the contractual zoning, it is necessary to develop frameworks so that comparative experience related to stakeholder interests can be conducted in a society with social and economic diversity. Just as it is important to investigate the statutory zoning system, it is also important to study the decision making units that do the zoning in the form of private firms. Coasian and public choice theories suggest comparative approaches to reveal the differences in institutional arrangements between the land markets where decisions made by individuals and private firms, and those where decisions made by planners. The judgment of land use planning can be evaluated in terms of the differences in the institutional design of different planning systems (e.g. those with zoning system and those that do not), or changes in land use rights assignment (about land boundary or uses) within a certain planning system. For contractual zoning between private agents, the issue of scale of the area within which they are applied (city wide versus specific neighborhoods) is also debatable.

Property rights have their common nature which is to exclude others in land use. The exclusive nature in land use is inseparable from boundary delineation as land as a good has physical attributes or spatial dimension, as distinct from a legal set of rights attached (Pearce, 1981). The concept of boundary delineation could be implied in land laws other than statutory zoning. While research on private contractual zoning (e.g. the comparative cases for Houston) usually focuses on property values and its socioeconomic results (e.g. racial segregation), different degrees of land use restrictions may result in cross-sectional spatial form variations among geographical areas (e.g. neighborhoods). Chronological changes in land use restrictions may also result in spatial dimension variation in a neighborhood under a given land use control system. Both cross-sectional spatial form variations and chronological changes can be a comparative approach to reveal how lands with or without private contractual zoning evolve. For government intervention, even in the case of contractual zoning where such intervention is curtailed, the imposition of constraints for market operation does not directly interfere with the spatial aspects of production. Instead, those interventions are typically achieved through tax, subsidy, or production quota. However, by using a series of rules, policies, and standards for land use activities, and government infrastructure system, government funded mega projects, and urban regeneration, planners held land use intervention tools from spatial aspects which regulate

the location, dimension, density, time of the production. Spatial dimension of land is the result of a specific institutional design.

CHAPTER III

RESEARCH METHODOLOGY

The conceptual framework set an overall aim for this study. That was to analyze how urban land policy is being implemented by the local government and the nongovernmental sectors in Houston in order to identify and evaluate the roles of local government and nongovernmental interest groups and stakeholders in urban land development mechanisms without a zoning ordinance, and to explore land use diversity and urban form that have evolved and their causal relationships with socioeconomic characteristics in three neighborhoods. In support of this fundamental aim, the hypotheses of this research were set: 1) Despite the lack of zoning law, Houston's regulatory land use policies (with many zoning elements) have significant influence on its urban development and urban form, particularly at the citywide scale; 2) private land use controls may result in the diversity of land use patterns and the different degrees of chronological changes of urban form at the neighborhood level, and 3) such diversity and chronological changes of urban form are closely associated with the neighborhood socioeconomic characteristics, such as age of neighborhood, household income level, education attainment, housing ownership, property value, etc..

The dissertation examined the change of urban form and land use in the city and its three case study neighborhoods without zoning regulation, and explored the socioeconomic reasons behind those changes. From the institutional perspective, it explored how local land use policies made by both the local government and non-governmental sectors shape urban form and land use diversity in Houston, a city born out of several anti-zoning battles. Despite the city's lack of zoning, local land use regulatory policies and some limited plans made by the municipality have significant influence on urban development. On the other hand, civic and private organizations such as super neighborhoods and homeowners associations fill the gaps left by the lack of land use zoning. The study examined how these two aspects contribute to land use planning and urban form at both city and neighborhood levels.

This chapter is primarily a methodological discussion for the study. It first identifies the overall research strategy of this study, and then explains the rationale of choosing Houston and its three neighborhoods as the case study. Data collection methods and data analysis and interpretation are also explained. The research uses both quantitative methods (i.e. GIS spatial statistical analysis) and qualitative methods (i.e. document review, formal and informal data gathering, and semi-structured interviews in Houston). The dissertation seeks to provide insight into the relationships between urban form, the lack of zoning ordinance, and neighborhood

planning. It also sheds light on the implications of urban growth without zoning law by comparing the results with some existing findings from zoned cities.

Overall Research Strategy

The overall research strategy was focused upon a case study. The rationale consisted of: (1) the research questions posed: the research questions of urban land use without zoning ordinance were explanatory and dealt with operational links over time; (2) the control a researcher had over behavioral events: the research topic on urban land use in Houston was a set of events over which the researcher had no control; and (3) the research topic as contemporary events: Houston's urban land use is a contemporary topic and the selected neighborhoods were established in the twentieth century. Yin (2003: 9) argues when 'a "how" or "why" question is being asked about a contemporary set of events, over which the investigator has little or no control', the case study approach has a distinct advantage.

There were several research strategies suitable for small-scale social research projects: survey, case studies, experiments, action research, and ethnography. Denscombe (1998) discusses the applications, advantages and disadvantages of each strategy. Survey strategy was not adopted as the most suitable one for this study because: (1) the strategy would produce data that lack much by way of detail and depth on the research topic; (2) the emphasis of the strategy on wide and inclusive coverage would limit the degree to which the researcher could monitor the accuracy of response; and (3) this study is also associated with qualitative data, while the survey method is more suited to quantitative data collection and analysis (although nothing excludes the use of survey with qualitative data). Experiment was not considered suitable as the researcher obviously had no control on land use, different actors, or events involved in this study. The most defining characteristics of the action research strategy were unlikely to meet in this study because: (1) change, as a way of dealing with practical problems and an integral part of research, was impossible to realize by the researcher within land use and urban form; (2) for the same reasons, the cyclical process for changes and the active participation of crucial people for changes, would not happen. Ethnography might be suitable for some evidence but was obviously less suitable for this research topic as a comprehensive strategy.

The study employed both quantitative and qualitative data. Quantitative data was used not only to describe the changes of land use in Houston, at the neighborhood scale in particular, but also to help explore the reasons behind these changes. Statistical and GIS data were mainly used to portray the characteristics, contrasts and patterns of changes presented in the forms of tables,

figures, and maps. Qualitative data is the other data sources used in this study. The data were mainly derived from published documents from the City and neighborhood civic clubs and homeowners associations, City of Houston administration archives, and direct physical field observation. The triangulation of different data minimized the degree of specificity in bodies of knowledge, and increased the credibility of research findings (Frankfort-Nachmias and Nachmias, 1992). Consistent findings among different data collection methods increased the research credibility, while any inconsistency helped in the formation of research arguments and observations and raised problems for further enquiry.

Houston as a Case Study

Houston, an understudied city, has enjoyed some of the country's most rapid economic and population growth over past generation because of its diverse and highly entrepreneurial economy, friendly business climate, and positive attitude towards growth. Houston is the only major city in North America without zoning ordinance. The growth of Houston illustrates a traditional free market philosophy in which land use zoning is seen as a violation of private property and personal liberty. In such a laissez-faire city, public-sector-initiated urban planning policies are limited, especially at the neighborhood level, in comparison with other cities in the country. Instead, many urban development policies and plans are made by the private sector and by business associations. Except for limited daily urban needs, transportation and infrastructure that are the responsibilities of the public sector, planning (especially that which effects economic growth) is initiated, developed, and monitored by the private sector (Fisher, 1989).

Bernard Siegan's *Land Use Without Zoning* (1972) remains the definitive document on Houston's "nonzoning". According to Siegan, the market place provides economic incentives for segregation of uses and produces patterns of development similar to what is found under zoning. Siegan also sets forth the argument of Houston's unplanned, unregulated development in a set of articles defending the City's refusal to enact a zoning code. He asserts that land use regulation in Houston is extremely modest when compared to what is contained in most zoning ordinances because Houston has no ordinance that sets forth specific restrictions on the uses that may be established on any property. In the meanwhile, during the past three decades, Houston has adopted more planning tools and involved diverse nongovernmental organizations in land use.

Houston as a case of city without zoning ordinance is not alone. In Pendall et al. (2006) study of land use regulations in the 50 largest metropolitan areas in the US, it is estimated that 5 percent of the metropolitan population lives in jurisdictions without zoning, and as much as 11

percent of the land area is unzoned. City without zoning is typical in Texas because the counties in Texas are not authorized to regulate land use except for the enforcement of minimal subdivision regulation. Zoning does not occur except where cities impose it in their expansive extraterritorial jurisdictions. Hence the study of Houston has implications for cities without zoning ordinance in both Texas and the country.

Research Questions

Based on the research hypotheses and the literature review, the research questions were grouped into four interrelated headings:

- 1) Alternatives to zoning, in this research, were taken more as a political than as a professional means, driven by political interests. Why did Houston choose the alternatives to zoning in history? Who influenced the politics of the option of “non-zoning”? What are the changes of the politics, if any, with the growing power and influence of non-governmental organizations in land use? How does land use politics work in promoting the city’s growth? The questions addressed the political reasons for Houston’s land use system and its contributions to the city’s urban development in history.
- 2) Despite of the lack of zoning, Houston has regulatory land use policies with zoning elements. How do local land use policies made by public sector impact the overall urban development of Houston? What are the different land-use planning tools (e.g. ordinances and plans) used by public sector? How do they shape urban form of Houston? How is the city different from those zoned cities in the existing research findings in terms of its land use and the relevant issues? The questions critically examined Houston’s land-use planning and urban form at the citywide scale.
- 3) Neighborhood land use patterns are formed by political institutions at community levels. Houston’s diverse land use patterns helped to understand the social, political and economic reasons underlying the neighborhood diversity of urban form. In the meanwhile, the practice of private covenants as a land-use control means provided an example of a collaborative planning approach where land users make decisions on their surrounding environment. How do those civic and private governments like super neighborhoods and homeowners associations influence their neighborhood urban form in their land use decision making? How do the non-government organizations get involve in land use controls? What are the implications from private agreement making on land use

controls, as a kind of collaborative planning approach? What is the fate of those areas that are not covered by any deed restrictions in those neighborhoods? And the socioeconomic reasons behind them? As Zhang (2001) concludes in his research about Chicago urban growth is rooted in the features of neighborhoods rather than a direct consequence of spatial-related factor. Urban form is a dynamic process which evolves over time as the outcome of changing land use policies and agreements. The questions analyzed land use controls at the neighborhood levels using an institutional approach.

- 4) Neighborhood local factors include the socio-economic situation of a neighborhood, including demographic changes, the community's economic status, and its education quality. The factors also include housing stock and land use policies. This research considered local factors such as age of neighborhoods, household income level, education attainment, housing ownership, and property value. For the neighborhoods with similar local factors, whether, and if yes, how do their deed restriction statuses (i.e. with or without deed restriction) determine urban form at the neighborhood level? The questions resorted to quantitative analysis. The results were used to explore how the urban forms are determined by the deed restrictions and how well findings in neighborhood land use controls qualitative research can explain the spatial statistical results.

Data Collection and Data Analysis Methods

Quantitative Methods

In this research for the quantitative part, it used US Census data at neighborhood (block group) level to conduct citywide socioeconomic characteristics analysis for household income level, education attainment, housing ownership, property value. For three data driven alternatives: census tracts, block groups, and subblock groups, neighborhoods defined at the census tract level may provide less information about urban form changes than neighborhoods defined at the block group level; neighborhoods defined at the subblock group level may reveal little more information (Song and Knaap, 2004). Therefore, neighborhoods were defined by block groups. This part of the study used cluster analysis to group neighborhoods (block groups) so that the neighborhoods with similar local socioeconomic factors could be identified within Houston's urban area. The selection of the neighborhoods for in-depth urban form analysis also depended on the availability of their historic and current deed restriction statuses. The information on deed restriction were obtained by contacting homeownership associations or neighborhood clubs. The

study then selected three neighborhoods, one with strict deed restriction in place, one without any deed restriction, and a third with expired deed restriction to measure their urban forms.

Quantitative research methods have been widely used to test changing land use patterns and forms (see for example, Carruthers, 2002; Nelson and Moore, 1996; Nelson, 1999; Song and Knaap, 2004; Zhang, 2001). However, quantitative research at neighborhood levels to examine urban form for those without growth management programs is sparse. Conventional quantitative research on urban growth compares suburban growth to central city growth in terms of the location of population growth (Chinitz, 1965), or focuses on the change of population density (Mills, 1980). Similarly, comparative research for urban area and urbanized land areas using population density has also been done (see for example, Fulton et al. 2002; Sierra Club, 1998). In more recent research Wassmer (2000) investigates the share of metropolitan population, employment, retail sales, farmland, poverty rates, and income levels for those that lived in the central city, the central county, and the urbanized area. All those studies provide little about urban form.

One of the policy-relevant quantitative approaches for urban form was developed by Allen (2001) using part of INDEX, a policy planning support system for forecasts of vehicle miles traveled, ambient air emissions, as well as employment and housing balance. Besides the information about density, nuclearity, and centrality studied in previous research, measures of transportation, housing and employment options, mixed use, and transit and public facility accessibility address more policy issues concerning residents and decision makers. Song and Knapp (2004) use approaches similar to Allen's to measure urban form at the neighborhood level (block groups as neighborhoods) for Washington County, the western portion of Portland by five dimensions—street design and circulation systems, density (without data for multifamily units), land use mix, accessibility and pedestrian access.

Several measures of urban form are developed from the approaches used by Allen (2001) and Song and Knaap (2004). Using GIS, the study conducted spatial statistical analysis for the urban form for each of the neighborhoods over two decades period (1985 until 2005. *Note: the land use categories data is only available since 1985, and the historic shape file data is even limited--it is from 2000 to 2006*). In addition, the statistical analysis compared the results among different neighborhoods. The urban form of the neighborhoods was measured by five dimensions:

- (1) Street design and circulation systems: measured by 1) Internal Connectivity: number of street intersections divided by sum of the number of intersections and the number of cul-de-sacs; the higher the ratio, the greater the internal connectivity. 2) Block Perimeter: median perimeter of blocks; the smaller the perimeter, the greater the

internal connectivity. 3) Blocks: number of blocks divided by number of single family housing units; the more the blocks the greater the internal connectivity. 4) External Connectivity: median distance between Ingress/Egress (access) points in feet; the shorter the distance, the greater the external connectivity.

- (2) Density: measured by 1) Lot Size: median lot size of single family residence in the super neighborhoods; the smaller the lot size, the higher the density. 2) Single Family Unit Density: single family units divided by the residential area; the higher the ratio, the higher the density. 3) Floor Space: median floor space of single family units in the neighborhoods; the smaller the floor space, the higher the density.
- (3) Land use mix: measured by 1) acres of non-residential land use (commercial, industrial, and public land use) divided by the number of housing units, and 2) the percentage of each non-residential land use in the area. A further step is to analyze land use diversity H .

$$H = - \frac{\sum_{i=1}^s (p_i) \ln(p_i)}{\ln(s)}$$

where H = diversity index; p_i = proportions of each of the land use types such as single-family residential, multifamily residential, industrial, public, and commercial uses; and s = the number of land uses. The higher the value, the greater the land use diversity (Song, 2005).

- (4) Accessibility: measured by 1) Commercial Distance: median travel distance from the single family residences to the nearest commercial uses; the shorter the distance, the greater the accessibility. 2) Bus Stop Distance: median travel distance from the single family residences to the nearest transit stop; the shorter the distance, the greater the accessibility. 3) Park Distance: median travel distance from the single family residences to the nearest public park; the shorter the distance, the greater the accessibility.
- (5) Pedestrian Access: measured by 1) Pedestrian to Commercial: percentage of single family unit parcels within ¼ mile (Duany and Plater-Zyberk, 1992) of all existing commercial uses; the higher the percentage, the greater the pedestrian access. 2) Pedestrian to Transit: percentage of single family unit parcels within ¼ mile of all existing bus stops; the higher the percentage, the greater the pedestrian access. 3) Pedestrian to Park: percentage of single family unit parcels within ¼ mile of all parks; the higher the percentage, the greater the pedestrian access.

The spatial data resources were US Census data, Harris County Appraisal District (HCAD), Gulf Coast Institute, and the statistical studies at neighborhood levels from Houston's Department of Planning and Development. Most data were available in City of Houston Geographic Information System (COHGIS) release 6 (1998), releases 9-11, and COHGIS release 12 (2006). These DVD data dictionaries are developed by Information Technology Division of Houston Planning and Development Department. The data themes that were used are super neighborhoods (SNBR in GIS database), parks (PARKR), buildings (BUILDING), parcel information (PARCEL), apartment information (APT.DBF in GIS database), commercial building information (BUILDINGS.DBF), historical land use information (1985-2005, LUSE.DBF), 2000 census block group (GRP 2000), and major roads (MJROAD).

The spatial statistical results were used to 1) investigate the extent of urban form change of each of the neighborhoods without zoning ordinance over the two decades; 2) compare the extent of urban form's statistical difference among those neighborhoods; 3) help qualitative research approach to explore socio-economic and institutional reasons for those variations among the neighborhoods; 4) assist qualitative methods to reveal historical, socio-economic, and institutional rationales that resulted in the changes of each neighborhood over time; and 5) if possible, compare the generalized quantitative observations of those neighborhoods with the existing studies on impacts of urban land use controls on urban form (for instance, Song and Knaap, 2004; Song, 2005 among others). For instance, their study of two neighborhoods in Portland, a 'typical' neighborhood Forest Glen and a 'new urbanist' neighborhood Orenco Station produces the urban form measurement results as Table 2).

Table 2: Urban Form Measurement for Forest Glen and Orenco Station in Portland (Source: Song and Knaap, 2004).

Urban form measure	Forest Glen	Orenco Station
Median block size (median perimeter in feet)	3,365	830
Number of blocks per SFDU	0.026	0.15
Actual non-residential area per SFDU (sq.ft.)	0	2,068
Median distance to nearest commercial use (feet)	3,184	834
Median distance to nearest park (feet)	1,267	873
Percentage of SFDUs within ¼ mile of any commercial uses	0.04	0.78

Qualitative Methods

In contrast to much of the stereotype of Houston as an “unplanned” city that comes from its early history before World War II, the City has since actually adopted most of the planning tools and processes that other cities use. Houston does not have zoning, but there are many planning tools such as subdivision plats, downtown development plans, super neighborhoods, and deed restrictions. Those are put in place by public and private sectors. The qualitative research focused on land use planning tools that have influence at neighborhood level in particular, such as subdivision plats, deed restrictions, super neighborhoods and their responsible organizations.

The expected result of this empirical research was to analyze the impact of neighborhood planning approaches on urban form in an unzoned city, and to reveal the implications in land use planning and (non)zoning. Based on the anticipated research results, the specific methods employed were:

- (1) Documentation: The documents included agendas and minutes of meetings; administrative documents, such as regulations, proposals and plans; and local magazines and newspapers. Some of the examples included:
Houston Land Regulation and Development Brochure (Houston Planning and Development Department); Tomorrow: A Publication of the Gulf Coast Institute (2006); Houston Downtown Development Framework: A Vision for 2025 (Central Houston, Inc., 2004); Goals for Tomorrow: A Comprehensive Planning Framework for the Houston-Galveston Area Council (Houston-Galveston Area council, 1998); Montrose Pedestrian and Bicyclist Plan (Lockwood, Andrews & Newnam, Inc., 2005); deed restriction documents from neighborhood associations; newspapers and magazines such as Architectural Record, Houston Chronicles, Cite: a publication of the Rice Design Alliance often have reports about Houston planning.
- (2) Archival Records: The archival records included maps and charts of the physical layouts of the sites and the changing process; and statistical data, in particular those of land use and planning, about the sites. Some of the examples included:
Houston Land Use and Demographic Profile 2000 (Houston Planning and Development Department); How We Compare Study 2005 (Houston Planning and Development Department); Houston Housing and Households Study 2004 (Houston Planning and Development Department); Super Neighborhood Demographics (Houston Planning and Development Department); The Houston Metropolitan Study: an entrepreneurial community looks ahead (University Houston Center for Public

Policy, 1998); Simply the Best (2005 Report of Port of Houston Authority); reports from community associations and civic clubs.

Data analysis in qualitative field research was considered an ongoing process relevant to data collection where observers formulated important themes and refined or revised them during the research process (Frankfort-Nachmias and Nachmias, 1992). The overall strategy for data analysis followed the theoretical propositions of the case study. The theoretical propositions regarding causal relationships not only guided the case study analysis, but also helped to organize the study and to define alternative explanations to be examined. The main data analytic method in this study was Yin's (2003) *Explanation Building* technique, which is similar to grounded theory (Glaser and Strauss, 1967), but with different ultimate goals. The goal of this method was to analyze the data by building an explanation about the case. Yin sees the eventual explanation is likely to be a result of a series of iterations and statement/proposition revisions, that is, the case study evidence is examined, theoretical positions are revised, and the evidence is examined once again from a new perspective, in an iterative mode. The compiling of chronological events was used in this case study. The procedure had an important analytic purpose that was to investigate causal events in urban land policy and its implementation. The procedures of analysis involved coding and categorizing data (and writing memos and drawing diagrams), identifying relationships and themes, developing and refining generalization, and finally using generalizations to improve any relevant existing theories.

The data analysis in this study went through the process of data reduction, data display, and finally conclusion drawing, which was listed by Robson (2002) as a primary component of data analysis. For any quantitative data collected, data reduction was realized by descriptive and summary statistics; data display by graphs and tables of correlations; and conclusion drawn by inferential statistics and so on. For the qualitative data, data reduction process went through session summary sheet, document sheet, development of coding categories, memos, and interim summary. Coding categories first attached labels to groups of words obtained through primary and secondary data, and then grouped the initial codes into a smaller number of themes or patterns. The interim summary attempted to summarize the findings and figure out what still needed to be collected. The interim summary helped direct and focus the later phases of data collection.

Research Limitations

By using case study, the study involved an in-depth record of an individual city Houston and a group of three neighborhoods in the city by collecting and examining various observations

and records of Houston's experiences without zoning ordinance. Case study was helpful to get a detailed contextual view of Houston's particular land use control approach, where experimental studies were not possible. It helped understand the factors that are part of the development of certain type of land development control in an individual city.

However, this study of Houston involved only a single individual city for the land development control category where it is primarily achieved by "private contractual zoning". In addition, the urban form spatial analysis of the neighborhoods only represented a few different types of neighborhoods in the city, and therefore, may not be representative of the whole general group.

For the qualitative methods part of this study, this research sometimes relied on descriptive information provided by different resources. This left room for important details to be left out. Also, much of the information collected (e.g. archives and documentations) was retrospective data, recollections of past events, and was therefore subject to the problems inherent to memory. Therefore, the conclusions that were drawn might suffer from a lack of reliability. It was difficult to generalize findings to different settings as context and environment are dependent.

Triangulation

Triangulation technique in case study helped to confirm the validity of the research. This study used three types of triangulation: theory triangulation, method triangulation, and data source triangulation.

This research used theory triangulation by using both institutional economics and public choice theories. It also combined quantitative and qualitative approaches. Two resources of data collection of this research were used: documentation and archival records. Apparently, each of these data collection methods has certain advantages and some inherent limitations. By using two types of data collection, the study tried to minimize the degree of specificity of certain methods to particular bodies of knowledge. For the quantitative data, the research applied five different measurements to examine the urban form. If the findings yielded by the different methods are consistent, the validity of those findings is increased. It helped to partially overcome the deficiencies that flow from using only one method. Multiple methods also addressed different but complementary questions within a study.

While the Houston Planning Department has descriptive statements on the deed restriction status for some of the neighborhoods, it was difficult to figure out the exact deed

restriction status for each of the lots in a certain neighborhood. Houston Planning Department is soliciting deed restriction status from the neighborhoods citywide recently and plans to integrate the information into existing spatial information. The research would be enhanced when the deed restriction status survey is completed by the Houston Planning Department.

Generalizability

Case study results can be generalized to theoretical propositions (analytical generalization) but not to populations (statistical generalization). A case study of Houston might be concerned with explaining the land use control in a particular “private contractual zoning” city. Houston as a city without a zoning ordinance is not alone. In Pendall et al. (2006) study of land use regulations in the 50 largest metropolitan areas in the US, it is estimated that 5 percent of the metropolitan population lives in jurisdictions without zoning, and as much as 11 percent of the land area is unzoned. Cities without zoning are typical in Texas because the counties are not authorized to regulate land use except for the enforcement of minimal subdivision regulation. Zoning does not occur except where cities impose it in their expansive ETJ. Thus Houston provides some kind of generalizability beyond its specific settings studied. Houston might be a representative sample of settings for jurisdictions without zoning ordinance. But that may not imply that Houston is a “typical” example of this group of jurisdictions because Houston is the largest one among them.

Tying theories to literature and empirical findings in this study enhanced the validity and generalization of case study research. In terms of theoretical generalization, Houston case as a particular study provided theoretical insights in the debate of institutional economics and public choice theses, as well as the discussions on similarities and differences among three land use development controls categories in planning practice.

Summary

This chapter discusses the use of a case study as the overall research strategy for this study because the research hypotheses and questions raised, the control the research had over the urban land use events, and the contemporary nature of the research topic gave the case study methodology a distinct advantage over other research strategies. Houston was selected as the case for investigation given many unique features of the city. Houston’s rapid economic growth and urban development combined with its special status as the only major city without zoning not

only justified it as a case with implications for other cities in the country without zoning ordinance, but also contributed to the theoretical debate on strong public intervention versus market-oriented mechanism in land development controls, and even broader, in urban planning. In addition, the city's dependence on private land use control tools, which only cover part of the city and mainly apply to residential land use, may results in such land use diversity and urban form that the cities with zoning law might not have. For the last two decades, the city has continuous urban growth and population increase which many other sunbelt cities have not experienced, despite of the critiques on the problem of its land use without zoning. The position of Houston in its land use policy making has resulted from the city's political culture and pro-growth development philosophy which can be traced back to decades ago but still has significant influence on the city's current urban development as the city seems to benefit from it in many aspects. All these make Houston an ideal place for the proposed case study.

Data collection methods for this study were mainly informed by the research hypotheses, research questions, and overall research strategy. For the qualitative analysis, the data collection methods used in this study were documentation and archival records. For the quantitative analysis, the urban form measurement employed GIS data that were collected from Houston Planning and Development Department. Three selected neighborhoods for urban form measurement represented three typical land use patterns in Houston, with diversities in their locations, neighborhood development, and socioeconomic characteristics. All planned communities at their very beginning in history, three neighborhoods showed significant differences in many aspects. A specific list of contents for investigation for each data collection method clarified the functions of that method and the type of data to be collected. Those methods were supplementary to each other to enhance the data validity since the triangulation of different data minimized the degree of specificity in bodies of knowledge, and increased the credibility of research findings.

The main data analytical method in this study was the explanation building technique, with the goal of analyzing the data by building an explanation about the case in an iterative mode. The analysis processes for quantitative and qualitative data were discussed respectively. Certain techniques for qualitative data process were proposed to display evidence and draw conclusions.

Given the overall strategy for this study, the processes and techniques proposed in this research design were only taken as an initial set of methods at the early stage of the research. Robson (2002) argues that it is not feasible to pre-specify many of the design details at the beginning stage, and the design itself, as well as the theoretical and conceptual framework, should be viewed as emerging during the research.

CHAPTER IV

URBAN DEVELOPMENT AND LAND USE CONTROL IN HOUSTON

Houston is ranked as one of the Gamma World Cities in GaWC inventory of world cities by Beaverstock et al. (1999), in which cities are ordered in terms of “world-cityness”. Friedmann’s (1986) hierarchy identified Houston as one of the core secondary world cities. Houston is also defined as a specialist city because of its status as the world’s energy capital. The city ranked 10th in terms of global network connectivities of U. S. Cities (Taylor and Lang, 2005). Besides its world city status, Houston is the only major city in North America without a government land use zoning ordinance. The growth of Houston illustrates a traditional free market philosophy in which land use zoning ordinance is seen as a violation to private property and personal liberty. In such a *laissez-faire* city, public-sector-initiated urban planning policies are discouraged, in comparison with other cities in the country. Many urban development policies and plans are made by investors, developers, builders, realtors, homeowners, architects, and planners in the private sector and by business associations organized by city enterprise elites. Except for the limited daily urban needs that are the responsibilities of the public sector, planning is initiated, developed, and monitored by leading voices in the private sector. Then how does local land use policy and urban planning practice work in this unique political economic setting, a dynamic city with growing economic and demographic diversity?

This chapter explores how local land use policy made by both the local government and non-governmental sectors impacts urban development in Houston, which was born out of several anti-zoning battles. Despite the city’s lack of zoning, local land use regulatory policies made by the municipality such as extraterritorial jurisdiction, annexation, minimum lot sizes, minimum parking requirements and setbacks, street width and large freeway mileage have had significant influence on urban physical development. On the other hand, private and civic organizations such as super neighborhoods and homeowner associations fill the gaps left by the lack of land use zoning. This chapter examines how these two aspects contribute to the city’s planning, and whether this kind of planning matter in a ‘unzoned’ city like Houston.

The City of Houston

The city of Houston began on August 30, 1836, when New York real estate investors Augustus Chapman Allen and John Kirby Allen named their town after Sam Houston and later persuaded the Texas Congress to designate the site as the temporary capital of the new Republic

of Texas. Situated on the headwaters of Buffalo Bayou, the town of one-fifth square mile in size attracted 1,500 settlers in its first year (Melosi, 1994). In 1853 and 1857, sizable appropriation was used to clear Buffalo Bayou and dredge a ship channel to Galveston Bay. By 1861 Houston was the rail center of Southeast Texas, and when the Houston and Texas Central reached Denison in 1873, Houston joined the national rail network. In 1870 Congress declared Houston a port of entry. A few years later, a group of business leaders secured funds to upgrade the ship channel and port facilities. By 1875, as David McComb has noted, Houston had grown from “a frontier society” into “a well-established commercial town with a network of railroads and a useful bayou” (cited from Melosi, 1994). In 1900 Houston was a city of about 50,000 people lived in the urban area of around 70-80 square miles along the banks of Buffalo Bayou.

After the Spindletop oil discovery ninety miles east of the city in 1901, the city became the leading oil refining centre in the country. Within ten years, the oil discovery led to the founding of the Texas Company (now Chevron) and Humble Oil and Refining Company (now Exxon Mobil). Besides oil, Houston has many natural advantages. The city sits on an enormous fresh water aquifer. The city is located near fertile soil good for cotton. It also has natural resources such as timber. As a result, Houston emerged as a city of regional significance, with commercial economy built upon cotton, lumber, and petroleum. Land developers inspired the spread of the city when they built suburbs such as Pasadena (1892), Houston Heights (1892), Deer Park (1892), Bellaire (1911), and West University Place (1919). As part of the social code, separate residential areas were developed for African Americans, Mexican Americans, and whites around the end of the 19th century. Despite occasional outbursts, nothing changed the legacy of slavery until the civil-rights movement of the 1950s and 1960s. However, Houston remained a small city until its rapid growth in the post-World War II era (Shelton et al. 1989).

During the Second World War, the city became the world’s largest petrochemical manufacturing site. Houston ranked sixth in federal wartime plant investments (Mollenkopf, 1983). At that time, some \$700 million was invested in Houston’s local chemical facilities by the Defense Plant Corporation (DPC). The DPC also built two great pipelines, the Big Inch and the Little Inch to transport petroleum to the Northeast. These investments were also a stimulus for private investment in advanced technology, defence, oil and natural gas, tourism, and property during and after the War. Along with the investment increase and industry expansion, Houston started to experience rapid population growth. In 1948-49, to avoid encirclement by incorporated suburbs, the Houston City Council used its annexation power to envelop the older suburbs (McComb, 2003). As a result the city doubled in size. Starting from the early 1950s, Houston experienced the great majority of its growth in the age of private automobiles. The city’s first

expressway, the Gulf Freeway, connected Houston and Galveston in 1952 and later became a part of the interstate highway system. In 1956 the council voted more annexation, and in 1960 while fighting with neighboring towns, the council threatened to annex all unclaimed land in Harris County. Compromises finally brought the annexation war under control. The expansion of scientific, technical and managerial jobs drew well-educated people from throughout the country and made the population more diverse. The city gradually changed to a multi-racial metropolis.

The driving force behind the 1970s post-industrial economy was the managerial and technical employees in the oil and gas industries in the city. The local economy in other fields also benefited—the Texas Medical Centre became a world-renowned research and treatment centre with more than 42 non-profit institutions. The energy industry was still the primary economic contributor as it accounted for over 85 percent of local employment in the early 1980s (City of Houston, 2000a). The oil industry did not develop with a free market in that public regulation involved numerous benefits to oil entrepreneurs, including tax breaks, price fixing and subsidies directed to petroleum infrastructure. However, in the early and mid 1980s the oil industry slumped with the sharp oil price drop: the region lost a net of 200,000 jobs between 1982 and 1987 (University of Houston Center for Public Policy, 1998). Houston gradually recovered in the early 1990s. Besides the energy sectors, there was significant growth in other sectors such as high technology industries, professional services, medical research and oil related technology industries. While in 1990 energy accounted for 60% of Houston's economic base, it accounted for only 49% in 1999 (Smith, 2000). Nearly half of all jobs today are in nonenergy fields such as business, services, technology, medicine, etc. Houston-based Compaq Computers became one of the largest PC manufacturers in the world. Continental Airlines also chose Houston as their headquarters in the 1980s. The city enjoyed an improving economic climate in the late 1990s as new commercial and residential buildings and a sharp increase in property and sales taxes generated more public revenue. At the beginning of the century, for three consecutive years, Houston ranked first in the nation in new business growth, according to American Business Information. A survey shows that more than 31,000 new local business were started in Houston, much larger than the second, Los Angeles' 16,780 (City of Houston, 2000b).

Between 1990 and 2000, Houston had the third largest population growth in the country, remaining the fourth largest city in terms of population (U.S. Census Bureau, 2000). At 618 square miles, the city of Houston could contain the cities of New York, Washington, Boston, San Francisco, Seattle, Minneapolis, and Miami. However, Houston is far less densely populated than most other cities of a similar size, with only 3372 people per square mile (1297 per sq.km.), less than half the density of any of the three cities larger than Houston. Los Angeles has 7877

residents per square mile (3030 per sq.km), while Chicago and New York have over 10,000 residents per square mile (3850 per sq.km) (Lewyn, 2005). With vacant land accounting for 24% of the City's total land uses, it presents opportunities for the City to guide future growth and leverage infrastructure investments through better growth management and planning. Clearly these areas with high vacancy rates and land available for infill development can help accommodate future population growth. Between 1990 and 2000, Houston experienced approximately a 20% increase in population.

Along with the changing employment opportunities and immigration of population from the region and across the nation, the residential patterns before the 1960s has changed from heavily concentrated to much less concentrated and disperse (desegregation) particularly after the mid-1980s. The region's population are among the most diverse in the country, with the third lowest percentage of non-Hispanic whites among the top 20 metropolitan. By 1990, only 38 percent of the black population lived in heavily black tracts and 47 percent of the black population lived in tracts where they were not a majority (University of Houston Center for Public Policy, 1998). The non-Hispanic whites kept growing in the 1960s and 1970s, due partly to annexation of suburban areas, but dropped sharply in the 1980s, with a net out-migration from the city. However, in the 1990s, non-Hispanic whites started to move back inside the 610 Loop or to adjacent areas like the Galleria. In the meanwhile there is continuing non-Hispanic white out-migration to exurban areas from inner city neighborhoods. Along with the demographic diversity, there is apparent economic diversity within the city: the richest and the poorest areas in Harris County both fall within the City of Houston.

In close relation to the continuing population growth, what is attractive to many is the fact that high income comes with low living expenses in Houston, partially due to its non-zoning. In 2005, the per capita personal income for Houston is \$39,052, higher than Dallas' \$37,075 and many other metropolitan cities such as Boston and San Francisco (US Department of Commerce, 2005). According to National Association of Realtor's (2006) statistics for median sales price of existing single-family homes, Houston's average price is \$149,100 (Dallas' is \$149,500) lower than the national average of \$220,000. NAHB/Wells Fargo Housing Opportunity Index assesses the affordability of existing homes based on a region's median household income. Houston (55.7 percent, and Dallas has 61.7 percent, San Francisco 7.5 percent, New York 5.1 percent) has more than half the homes sold would be affordable for those earning the median household income (Kotkin, 2007). However, the low housing price in Houston has not resulted in higher homeownership rate (Houston's 61 percent homeownership rate in comparison with the national average between 65 and 70 percent), because the low price rental housing stock offers strong

competition to homeownership, and as prices and rents have escalated slowly, homeownership does not provide potential homeowners as a protection against the uncertainty of growing housing expenses (Pendall, 2007).

With the continuous development of new museums, performing arts centers, and fashionable shopping districts, Houston is gradually moving from the role of economic challengers to that of rival in the arts, culture, and architecture to many other metropolitan cities. During the past decade, Houston not only had large annual immigration rate, but also attracted educated and talented domestic population from other cities. For instance, during 2004 and 2005, Houston's net domestic migration of "creative" professional occupations (such as management, business, financial, legal, healthcare and high-end sales) migrants per 1,000 is 1.69, very close to Dallas' 1.74. The city's net domestic migration of "super creative" professional occupations (such as computers, mathematics, architecture, engineering, life, physical and social sciences, education, art, design, entertainment, sports, and media) migrants per 1,000 is 0.90, higher than Dallas' 0.64. (US Census Bureau, 2005). The demographic and economic diversity benefited the city. During the 1990s, Houston's population in hard-core poverty areas fell by 107,272 (about 48 percent), which was one of the largest declines in the nation (Jargowsky, 2003).

One of the explanations for the migration is that Houston's land use planning model is in stark contrast to cities such as Boston and San Francisco, which have strict zoning, exacting building codes and laws governing historical preservation. Some economists say excessive regulation in such cities has slowed construction to the point where demand has outstripped supply, fueling a run-up in home prices (Glaeser, 2006). Such places have priced out today's highly skilled 'knowledge workers,' forcing them to live in a more affordable locale like Houston.

Political Culture

Houston has an individualistic history. The 1875 Texas constitution written by the Democrats reflects a strong anti-government bias. Its 1912 home-rule amendment allowed cities like Houston to do anything not prohibited by the state or federal governments. Houston's dominant political culture for the governance of planning and development is to assist private economic needs. Growth and development have long been goals among Houston's elites, and the city supports programs that enhance private economic expansion with only minimal supportive programs for public services in areas like public transit, health care and welfare. Pro-growth business leaders had great influence on the city. There were also disagreement among them. For instance, Jesse Jones and Hugh Roy Cullen fought over zoning for thirty years. However, there

was consensus among those business leaders on most issues. The political elite defined by the economic marketplace, and successful business leaders, are expected to exercise great influence in local decision making. One example in this regard is Houston's NASA Space Centre developed since the 1960s. U.S. Rep. Albert Thomas, chairman of the House committee that approved appropriations for NASA, worked constantly on behalf of his home community-Harris County. He hammered in Washington on the fact that Houston had all facilities necessary for successful operation of the project-climate, a fine site, deep-sea shipping, labor, and the scientific facilities offered by universities and foundations. More recently, the business organization Greater Houston Partnership, which is governed by 134 chief executives of Houston's leading companies and organizations, provided support for the Metropolitan Transit Authority's plans to build a 7.5 mile light rail system linking two of the city's major employment centres with its major league sports facilities, art centres, educational institutions and local neighborhoods. Houston, like many other American cities, has a pro-growth coalition. However, in Houston, public planning tends to work with private economic interests. In contrast to other cities, Houston's pro-growth coalition encounters weak competing coalitions such as environmental interest organizations and organized labour unions.

The implications for 'privatized politics' in urban policy making in Houston are clear: with planning removed from public debate and discussion, most people in the city, especially the marginalized, have little access to planning and policy decisions affecting them (Fisher, 1989). The *laissez-faire* capitalism and elite political culture results in poor social services. A number of costs are typically passed on to certain groups of residents, or external forms of government. For instance, Kirby and Lynch (1987) blamed the city's lack of zoning restrictions for the 300-plus toxic waste sites identified by the Environmental Protection Agency. Melosi (1994) documents that of eight incinerators operated by the city between the 1920s and 1975, six were located in Black neighborhoods, one in a Hispanic neighborhood, and only one in an area that was predominantly White. In fact, the five city-owned landfills, which ultimately complemented the incinerators, were all located in Black neighborhoods. The implicit assumption about the probusiness climate is that services can be ignored when they fail to meet the ends of economic growth or can be promoted when they prove a tangible value. The negative consequences of such a policy are poor service, inequity of distribution, and environmental degradation. However, there are some changes recently. Blacks were largely excluded from the political process until the 1960s. Winning with a multi-ethnic coalition, Lee Brown became the first African American mayor in December 1997. This was a significant change given the Mayor's dominant role in Houston's city governance. The Mayor not only sits and votes on city council, but appoints the

city judiciary and all department heads. For instance, the light rail project was possible partly because the Mayor appoints five of the nine seats of the Metro board. The light rail project got strong support from the Mayor. Mayoral actions make Houston change. Among typical mayoral initiatives are Kathy Whitmire's "Imagine Houston", Elyse Lanier's "Houston Image", Robert Lanier's Neighborhood to Standards, and Lee Brown's Super Neighborhood Program.

Houston's rhetoric is for limited government intervention, low taxes and low expenditure on public welfare, and a disinterest in social service and income redistribution programmes. Such an urban policy philosophy is supported by a strong belief in self-reliance and individualism (Lin, 1995). About 80 percent of Houstonians consistently agree with the proposition that "if you work hard in this city, eventually you will succeed". Just 74 percent of Los Angeles' residents and only 66 percent of New Yorkers agreed with the same statement (Rice University, 2007). The government has adopted the entrepreneurial spirit of the private sector in the public realm in which certain issues are highly regarded such as government performance at low cost, increased flexibility in agencies and personnel, decentralization, and privatization (Osborne and Gaebler, 1992). The belief in governing Houston is that the lack of interest in social service programmes would be compensated for by the support of pro-growth urban policies. As Ross et al. commented, the penetration of government by local business elites has been so considerable that the borderline between business and government is no longer clearly discernable (1991:56).

Until the 1970s, city politics was non-partisan. Labor unions, ethnic and community organizations were weak, and participation in elections was low. During the last three decades, the business community has become less unified. Changes in the politics (e.g. term limits, initiative process, etc.) have made leadership more difficult at all levels of government. The process of public vote on major policy changes (such as zoning) may take city officials' decision to uncertainties (University of Houston Center for Public Policy, 1998). In addition, the links between political economy and cultural change demonstrates that the political economy of Houston is increasingly decentralized (Lin, 1995). Houston's current leadership is fragmented, or at best, segmented, compartmentalized—the city, the county precincts, the Metropolitan Transit Authority, the Sports and Port authorities, and the Greater Houston Partnership. Super agencies such as the Texas Department of Transportation and the U.S. Army Corps of Engineers take advantage of this political fragmentation, and proceed with projects that may not be in the long term public interest (Brown, 2002).

Zoning Battle

Houston has had several passes at zoning. The first time was in 1927, when both a master plan and a zoning ordinance were proposed, but were strongly opposed by developers and property owners. Another master plan and zoning ordinance were defeated in 1938, although, two years later, the city did adopt its first subdivision regulations. In 1948, and again in 1962, voters overwhelmingly rejected proposals for comprehensive zoning (a two-to-one margin in 1948 and a 53-to-47 percent margin in 1962).

The impetus for zoning Houston in 1991 came from a grassroots movement of homeowners and neighborhood associations trying to protect their properties through a less tenuous legal framework than that afforded by deed restrictions. Zoning proposal for Houston is used primarily to protect single-family residential neighborhoods from the encroachment of urban forces, and more importantly, to protect their property values. A house in zoned West University Place or Bellaire might cost 10 to 15 percent more than a virtually identical residence across the street in unzoned Houston proper (Curtis, 1991). Neighborhoods struggling desperately with declining property values from the lingering depression of the 1980s were seeking for help from the city against all manner of businesses, some of them opened by out-of-work homeowners. Homeowners circulated a letter petition supporting planning and zoning; they also lobbied the city council, particularly minority members who had overwhelmingly opposed zoning in the past.

In Houston's history, it meant risking political suicide to mention the P word, much less the one beginning with a Z. The politics of the city changed profoundly over the decade before 1991. The zoning proponents argue that the city needs zoning, because all previous plans since the 1920s had proved unenforceable without the sanctions that zoning provided. In addition, the zoning proponents argue that it is both naïve and unwise to think that Houston merely needs deed restrictions for residential use alone because the city will become further divided between planned areas and neglected areas. In 1990, the city assigned only one lawyer to advise homeowners about the deed restrictions and how to enforce them. Neighborhoods that cannot afford expensive lawyer services and deed restrictions have seen their property values drop as incompatible land use has moved into their residential area (Dillon, 1991). Zoning has numerous tools to enforce those plans, including dedicated land use, performance standards, density control tools via FARs, building height restrictions, special use districts, and the protection of historic buildings. The proponents also hoped that zoning could deal with some urban blight. From the mid-1970s to the late 1980s, Houston had a 50% percent population increase. But along with the

growth came unprecedented urban blight. For instance, Lamar Terrace, a residential subdivision near the Galleria shopping center, became an overnight slum because of reckless land speculation. The Midtown area ended up with 50% of the state's halfway houses for parolees, while inner-city Neartown lost 10 percent of its housing in a few years (Dillon, 1991). The biggest challenge was creating an ordinance that combines maximum protection for neighborhoods with a maximum amount of flexibility for economic development.

As a result, city council proposed an enabling ordinance mandating that within one year the Planning and Zoning Commission present for preliminary approval zoning regulations to achieve the goals of an approved comprehensive plan. Although it was council's intention for zoning to follow the comprehensive plan, they realized that given the timetable this was not possible. So the original ordinance states that initiation of the comprehensive plan should be concurrent with the development of zoning regulations (Kelsey, et al., 1992). But work on the comprehensive plan began only in January 1993. This means that the zoning proposal were based on existing conditions rather than on a vision of what Houston wanted to be in the future, that is, the city would be mapped according to existing land uses-in effect freezing in time existing use patterns. All raw land over two acres in size would be zoned Open (O zone), and all single-family deed-restricted subdivisions would be zoned R1, the most restrictive residential category. However, recognizing and categorizing other categories were more difficult. The O zone, which was to preserve large areas in which Houston's entrepreneurial spirit could continue to flourish, might turn out to be an interim designation, eventually to be replaced by other zoning categories. The ordinance required, for instance, that any single family homes developed in the O zone be rezoned R1. A new district classification, the major activity center (MAC), was added shortly before the completion of the draft. Intended for areas of intense development such as downtown, uptown, and the Texas Medical Center, it included perimeter setback requirements less stringent than those in the O zone. Houston had over years passed numerous land use ordinances aimed at specific issues-parking, setbacks, sexually oriented businesses, signs. However, none of these had been incorporated into the draft zoning ordinance.

The proposed zoning ordinance divided the city into several districts. Residential districts aimed to protect neighborhoods from incompatible uses. They had stringent land use restrictions and development standards for land use compatibility. Residential districts included (1) R1 residential single-family detached; (2) R4 residential single-family (up to 4 units on a lot); (3) R8 residential only (up to 8 units on a lot); (4) RO residential only (no limit on number of units). Open and Major Activity Center districts aimed to provide maximum flexibility for development. They had few land use restrictions, and had performance standards to minimize land use conflicts

at the edges of the district and around nuisance uses. Urban neighborhood district applied to existing mixed use areas with a residential character and scale. It had fewer land use restrictions than residential districts, and had scale and property edge standards for nonresidential uses and large apartments. Industrial district had land use limitations to carry out purposes of districts; it had buffers required at edge of district. Other districts to meet special needs included planned unit development (PUD), special district for areas with unique characteristics (SD), landmark and historical overlay district (L and H), green space (GS).

The proposed zoning ordinance received many statements against it. Living in one of the best large cities in the country for small businesses, some Houstonians believed that zoning hurts small businesses, the engine of local economy whereas small businesses created a significant percentage of job opportunities in the country. In the meanwhile, zoning activates were believed to work for government or for large corporations who do not care about the fate of small businesses. For those against zoning, trying to zone older neighborhoods which were commercial/residential mixed-use areas that were in constant transition is a mistake. Strong land use controls may result in empty, abandoned buildings and tax revenue loss. Furthermore, protecting residential neighborhoods from commercial encroachment can be done through stricter building codes and nuisance ordinances in residential neighborhoods.

When the November 1993 election approached, the mayor, most city council members and influential business leaders all endorsed the notion that Houston's zoning time had finally come. Opinion surveys conducted by reputable pollsters predicted zoning would win going away. However, 52 percent of Houston citizens voted to reject zoning. According to a tabulation in the *Houston Chronicle* (Nov. 3, 1993), zoning was decisively opposed in low-income Black and Anglo precincts and favored in middle-income Black and Anglo areas. Hispanic voters also voted against zoning. A detailed statistics was as follows (Table 3).

Table 3: 1993 Houston Zoning Referendum Statistics (Source: *Houston Chronicle*, 1993).

Area	Turnout	For Zoning
Low-income Black	11.1%	27.9%
Low-income Anglo	17.6%	31.8%
Middle-income Black	23.1%	62.6%
Middle-income Anglo	28.1%	55.6%
Predominantly Hispanic	13.1%	42.0%
Upper-income Anglo	34.5%	43.8%

The statistics shows that if the turnout from the low-income areas had been higher, the zoning ordinance proposal might have been defeated more decisively. It also shows that the demand for zoning comes significantly from middle-income class. The voting result was similar to that in 1962, except that zoning was approved by 65 percent of the voters in upper-income Anglo areas on that occasion (Murray and Thomas, 1991). In short, it was the low-income areas, where land-use controls might have had the most effect in protecting residential neighborhoods from offensive land uses, that voted against zoning. Moorhead (1993) attributed the result to a last-minute fear/smear campaign by the well-financed opposition consisted of a wide mix of interests. Houston lacks the small suburban municipalities that are dominated by middle-income homeowners and where it is normal to expect that zoning will exist (McDonald, 1995). In addition, it is difficult to set up deed restrictions in developed areas where they either have never had deed restrictions or earlier restrictions have expired, due to the prohibitively high cost of setting up deed restriction system in those developed areas. Largely for this reason, the middle-income homeowners turned to the creation of a zoning ordinance in their voting.

In the past few years, public officials and community leaders have sought ways to control the impact of growth on the environment and quality of life. In 2003, city officials drafted an 'area plan' ordinance that would have empowered management districts or similar entities to write development standards unique to those areas. The idea drew strong opposition from developers and was never presented to the City Council. Current Houston Mayor Bill White still does not see zoning as the answer to Houston's land use issues. He states that there will be both new development and more rules to protect common interests, the city will respect consumer choice and not have some bureaucrat in City Hall become the taste patrol for the city (Hudson, 2007). One of most recently proposed rules is a new city traffic ordinance which would allow Houston to reject proposed developments that create too much traffic on neighborhood roads.

Annexation, Major Infrastructure and Activity Centers

Annexation

The 1912 amendment to Texas constitution gave Houston near total annexation powers. As a result, around-the-city annexations in the 1940s and 1950s allowed the city to double and redouble its size and population. By the Municipal Annexation Act of 1963, Houston was granted extraterritorial jurisdiction (ETJ) over adjacent land out to five miles in unincorporated areas for future suburban growth. The extent of the expansion depended on Houston's current population

and allowed the city to place all lands within five miles of its limits under ETJ. Only Houston was allowed to annex in this area, and no settlements could incorporate themselves without permission from the city or a change in the state law. In any given year, Houston could annex up to 10 percent of its total area or opt for postponed annexation of an area as long as it did not exceed 30 percent of the city's total area. (Adams, 1976, p.113). Between 1960 and 1996, this aggressive policy resulted in 119 annexations. By 1999 this generous annexation policy had allowed Houston to reserve approximately 1289 square miles (excluding the areas of cities within it) for future annexation. This has often been accomplished by manipulating the letter of the law: incorporating ten-foot wide strips in right-of-way along highways, thereby allowing the city to incorporate areas such as Lake Houston, Intercontinental Airport, and Clear Lake City, which lay beyond reserved but still unincorporated areas (Kaplan, 1984).

In recent years, resistance to annexation by outlying areas has increased in intensity. Clear Lake City has yet to reverse its 1977 annexation by the city of Houston. In the affluent northwest portion of Harris County, subdivisions quietly discussed future prospects for developing a separate city. Concern over Houston's annexation plans became more acute in the 1980s because of the economic hard times brought on by the collapse in oil prices. The city has always used annexation as a means to keep city taxes low while increasing the tax base. Political sensitivities within the city have also been raised by interest in expansion for fear that the annexation of predominantly white suburban neighborhoods would dilute minority voting strength. A particular severe battle of words broke out in 1995 when the city of Houston annexed the affluent subdivision of Kingwood north of downtown. As a consequence of the Kingwood case, the old model for annexation of the municipal utility districts is no longer feasible. In the past, Houston encouraged the creation of municipal utility districts by developers outside the city and waited until the municipal utility districts were built out to annex them into the city. The city is now having "strategic partnership deals" with municipal utility districts, in which the city agrees not to annex an area in 30 years while the municipal utility districts levy a one-cent sales tax equal to the city's rate, and share half of the proceeds with Houston. This is a net gain for Houston as the city does not provide service to those municipal utility districts (Nissimov, 2004). Houston's strategic partnership agreements with the municipal utility districts increased from three in 2000 to forty three in 2004.

Major Infrastructure

Houston has established its own way of planning and implementing major projects by using substantial public subsidies to advance the city development. The city has well-deserved reputation for infrastructure planning. Public infrastructure investments with funding from both the private and the public have played a key role in the economic growth. As Metrostudy President Mike Inselmann has said “the city grows where developers buy land and they buy land where new transportation corridors get developed” (Gulf Coast Institute, 2006). Houston Chamber of Commerce’s 15-year Regional Mobility Plan made in 1982 invested \$1 billion a year in mobility improvements. By 1992, the investments had included adding some 2,675 lane-miles of road, widening many major highways and freeways, and constructing the 21-mile Hardy Tollroad and the 28-mile Sam Houston Tollroad. In 1987, Harris County residents voted to finance road, flood control, and Port of Houston improvements with \$626.5 million in bonds. A \$95 million new terminal (Micky Leland) at the Houston International Airport was opened in 1991. \$2.6 billion in total was invested to upgrade the City’s three airports in 2000. With continuous expansions and upgrades, Houston now has the fourth largest airport system in the US and the sixth largest in the world.

After a long time debate, the first 7.5 miles of the \$340 million light-rail line along Main Street from downtown to Reliant Stadium were completed in 2003. Metro is seeking approval from voters for a local transit tax to finance a 22-mile addition at a cost of \$640 million. Again, the attempt encounters resistance. The antirail and prohighway forces have been running commercials contending it would be cheaper to buy every commuter a Ferrari. Supporters like the Gulf Coast Institute (2006) contends that in comparison with New York City, Manhattan and the City of Houston both have two million residents, but Manhattan will fit inside Loop 610 four times. Houston has 7.5 miles of rail transit while Manhattan has 75 miles. Eighty-two percent of Manhattanites walk, bike, or take transit to work, but only seven percent of Houstonians do that.

The Houston Ship Channel opened in 1914 and has been since widened and deepened. Recently, the most significant environmental measures taken by the port authority in 2005 are associated with its long-awaited completion of the Houston Ship Channel’s deepening and widening project in concert with the US Army Corps of Engineers. This \$639 million, 50 year project deepened the Houston and Galveston ship channels to 45 feet from 40 feet and widened the waterway to 530 feet from 400 feet. The Port of Houston stands at the heart of Houston’s international infrastructure. Port of Houston is the nation’s sixth largest port. More than 28 million tons of cargo moved through PHA facilities in 2005. More than two million tons of liquid

petroleum products moved through the Houston Ship Channel in 2005. It ranks first in the U.S. in foreign tonnage moved in 2005.

However, some infrastructure development encountered difficulties because of their locations. The extension of Chimney Rock was needed since the 1940s, but since it passes through Tanglewood, the second richest suburb in Houston, none of the mayors wanted to get behind it. The 610 Loop was created which was supposed to relieve the traffic congestion in the area, but it had the opposite effect as it became the most congested freeway in Texas, because there was no Chimney Rock or Voss to get people north and south of that area. It took from the 1940s to the 1980s to get this street extension project agreed to and completed. Former Houston Planning Commission Chairman Burdette Keeland commented in an interview: “It should show what kind of job we are talking about. If it takes 40 years to get one road, a badly needed road, extended, imagine what it will take to create a workable planning and zoning system.” For infrastructure development, the problem with a lack of zoning is that there is always confusion. Nobody knows what to do with property. That is also a problem for architects, who like uses to be defined before they start designing (Barna, 1985).

The plan and development of some major infrastructure may be at the costs of the minority neighborhoods and so receive strong resistance. In 2003, an environmental group fighting a plan that would sharply increase train traffic in Houston’s East End says the consortium (San Jacinto Rail Line) seeking the new rail line deliberately distorted 2000 census data to claim it would go through largely white neighborhoods. When the data used to map the route is corrected to reflect residents who identified themselves as Hispanics, which was not a main census category, the figures show that communities affected by the new trains are overwhelmingly Latino. The original map hid the fact that more than 50 percent of the affected residents are minorities. The East End, although gentrifying, still consists largely of modest, Hispanic neighborhoods. The original map identified census tracts as being either more than 50 percent white or less than 50 percent white. But when shaded the map to include everyone who called themselves Hispanics, large areas went from white to minority. 71 percent of the residents within a quarter-mile of the proposed operating route are Hispanic and 32 percent are children. 27,825 Hispanics, or 90 percent of the people who live within a quarter-mile of the route, were counted as white in the racial data the consortium provided (Rodriguez, 2003).

Activity Centers

Houston is poised to be a premier example of a polycentric region. Employment migration has resulted in concentrations of office employment in nodes scattered across the region—the activity centers. The region’s twenty activity centers vary in size and purpose. Those centers are CBD, Uptown/Galleria, Greenway Plaza, Texas Medical Center, Westchase, West Houston I, US 290/NW, Sharpstown, Greenspoint, Northwest Mall, NASA I, Universities, West Houston II, Energy Corridor I, Brookhollow, Southwest I, Bush International Airport, FM 1960 I, FM 1960 II, and Hobby Airport. In recent years, the desire of these workers for locations offering short home-to-work trips, security, and pleasant environments accelerate the migration of jobs to suburban activity centers. By the year 2000, it was estimated that 80 percent of Houston’s office space is located outside of downtown in activity centers like the Galleria.

Most of Houston’s major constructions are located in those activity centers. In 1987, the \$108 million George R. Brown Convention Center, the fourth largest in the country, was built in downtown. The privately funded \$72 million Gus Worthham Theater, home to the Houston Ballet and the Houston Grand Opera, opened in 1987. During the 1980s, the Texas Medical Center spent \$2.55 billion updating its facilities. With most historic structures restored, Downtown focuses on new construction. It works toward a residential population of 20,000, and offers a wide range of residential properties, from the most affordable to luxury developments. Most recently, light rail service began along Main Street from Downtown to the Texas Medical Center and Reliant Park. Metro has plans to connect other activity centers by light rails. However, the high cost of light rail construction means that Houston can build 10 miles of light rail a year with current funding. At the end of 2007, the Metro board approved a route on Richmond and Wheeler for the controversial University line, which will provide a 10-mile east-west complement to the existing 7.5-mile Main Street line.

Development of those activity centers have strong support from many non-government organizations. For instance, downtown development organizations include: Buffalo Bayou Partnership (BBP), which is a primary non-government partner for improvements to Buffalo Bayou planned for the next twenty years; Central Houston, Inc., with focus for Downtown-based economic development, major civic projects, access/mobility, long-range planning initiatives and advocacy for Downtown; Downtown District (HDMD), who provides specialized services not offered by traditional government, research, planning and general improvements of prime importance to Downtown’s future; and Main Street Market Square Redevelopment Authority

(MSRA) which offers public improvements to retail, residential, bayou and theater environments on Main Street and within its tax increment zone boundaries.

Since the beginning of this century, Houston has experienced a sports renaissance. No other American city has ever invested as much as on sports stadiums in as little time, opening three pro-facilities in 40 months for \$1 billion. They are the centerpiece of Houston's unsuccessful bid for the 2012 Olympics. The bid failed for Houston's image as having pollution problems, no zoning, hot weather and economic instability. Nevertheless those pro-facilities lend a positive identity to the city. All have been supported by popular vote. Under a 1997 state law, those votes allowed the sports authority to levy a 2 percent tax on hotels and a 5 percent tax on car rentals to build sports venues. This raised Houston's hotel tax to 17 percent, the highest in the nation. Minute Maid was completed in 2000 for baseball. This \$286 million project includes \$18 million from Astros, \$48 million cash on hand from hotel and rental car tax, and \$220 million in bonds. Reliant was completed in 2002 for football. This \$500 million project includes \$50 million from Texans fans purchasing personal seat licenses, \$18 million from Texans, \$7.5 million from Aramark, \$4 million from Harris County Sports and Convention Corp, 4.6 million from Rodeo Houston, 1.4 million loan from Rodeo Houston, \$367 million in bonds, \$25 million loan from Texans, and \$22.5 million in loans from Harris County. The most recent Toyota Center was completed in 2003 for basketball. The center costs \$252 million, which includes \$20 million from City of Houston, \$212 million in bonds and bank loans, and \$20 million loan from Rockets.

Governmental Intervention in Land Use Control

The City established both a Planning Department and a Planning Commission in 1927. The Planning Department produced a master plan for the city in 1929 that included a proposed zoning ordinance. However, the Planning Commission was disbanded after the zoning ordinance failed under opposition from the Houston Property Owners League. In 1937, the Planning Commission was reconstituted to once again investigate the possibility of creating a zoning ordinance. However, the general public did not embrace zoning at this time and subsequent attempts failed in 1948, 1962 and 1993. Today the Planning Commission reviews and approves subdivision plats and development plat variances. Houston planning commission includes 26 members, who are from the Department of Public Works and Engineering, the Metropolitan Transit Authority, the Commissioners' Courts of Harris County, Fort Bend County, and Montgomery County, and residents and voters of the city and its extraterritorial jurisdiction. The Department of Planning and Development provides tools and resources to strengthen and increase

the long-term viability of neighborhoods; regulates land development in Houston and the extra territorial jurisdiction; and reviews, investigates and promotes land regulation policies for the changing demands to Houston's growth and quality of life. In Houston's history, comprehensive plans have been made from time to time, but have been ignored due to the objections from private sectors.

Despite the *laissez-faire* rhetoric, government intervention in Houston's growth has had a significant impact on urban development. The City of Houston draws up park and library master plans, neighborhood plans, major thoroughfare plans, and various infrastructure plans. For instance, Houston's park master plan takes care of more than 43,700 acres of green and growing city parks. The City produces the Major Thoroughfare and Freeway Plan (MTFP) annually. In the plan, the city identifies sections of roadways that are in need of expansion. The plan serves as notice to the public for developing land adjacent to the identified roads. The Houston 2000 Strategic Transportation Plan, a regional plan commissioned by the Mayor, recommended policy and strategic actions to address Houston's future transportation issues including growth trends, the roles and responsibilities of organizations associated with transportation planning, and policies to trigger future action. More recently the City proposes that residential developments of 100 units or more need to include park space, and developers can either provide land (2.6 acres for park space) or pay fees (\$80,000) for park acquisition and improvements. Houston Galveston Association Council (HGAC) makes regional transportation plans. The 2025 Regional Transportation Plan is a federally required plan that ties together all roads, transit, bike/pedestrian, and port/airport projects for the Houston-Galveston area over the next two decades. The HGAC develops the long-term plan with the cooperation of local cities, counties, and transportation agencies. By 2025, the region will have 11,000 land miles of new roads (cost 77 billion) in total. Harris County Flood Control District drew up the Brays Bayou Improvement Plan. The first project of Buffalo Bayou's 30-year master plan is recently completed with a new lighting system, hike and bike trails. In June 2006, the City of Houston embarked on a major initiative, Urban Corridor Planning. This initiative will change how the City regulates development and designs its streets and other infrastructure in order to create a high quality urban environment in areas along METRO's light rail and guided rapid transit corridors: Main Street, Uptown, East End, North, Southeast and University. Houston's municipal government exercises some regulation of land use in a variety of ways, including: minimum lot sizes, minimum parking requirements and setbacks, street widths and block sizes. Moreover, building lines regulation helps preserve the residential character of an existing block in inner city neighborhoods by requiring new development to comply with the most frequently constructed building line along

the block. Similarly, prevailing lot size regulation requires new development to comply with the most frequently occurring lot size.

There are some new government interventions in land use in recent years. For instance, as a result of collaboration among the Old Sixth Ward Neighborhood Association, the City, and Historic Houston, the City Council created Houston's first protected historic district in 2007, shielding more than 200 buildings from demolition in the Old Sixth Ward. Since 1998, 10 historic buildings in the district have been demolished, 51 inappropriately altered, 4 relocated, and 12 replaced with structures that are incompatible with the neighborhood's characters. The new historic district ordinance protects the 33-acre district where some of the structures were built in the late 19th century. The ordinance does not directly regulate land use, but it dictates building materials so construction and rehabilitation will have to follow design regulations (e.g. overhanging roof eaves are encouraged while flat roofs are forbidden for residential buildings). The regulations are important not only to the current historic buildings but also to 23 vacant lots in the district.

Houston regulates land use by its Department of Planning and Development. Houston City Code Chapter 42 is the city's development ordinance. It was made in 1983. The ordinance sets standards for minimum building setbacks and maximum block lengths. The city also has strong ordinances for billboards and mobile homes, and regulations establishing a minimum distance (1,000 feet) between sex-oriented business. Chapter 42 was amended in 1999 to divide the city for the first time into an urban zone inside Loop 610 and a suburban zone outside the loop. Loop 610, which originally was designed and constructed as a bypass, has essentially become the city's main street-a thoroughfare lined with commercial and retail uses. The ordinance allows for higher density residential development and for narrower streets in the urban zone. The role played by local developers in the Chapter 42 amendment debate, and its outcome, demonstrate that in one important respect, the local political landscape has not changed. In too many cases, small houses and bungalows in established neighborhoods are being torn down to make way for two or three townhomes on the same lot, threatening the neighborhood character.

Minimum Lot Sizes

According to amended Chapter 42, for single-family residential in suburban area, the minimum lot size requirement is 5,000 square feet. For single-family residential in urban area, the minimum lot size requirement is 3,500 square feet. Lot sizes less than the otherwise applicable minimum prescribed above are permitted in subdivisions where compensating open space is

provided within the boundaries of the subdivision plat. However, in no event the lot sizes can be less than 1,400 for both suburban and urban areas. In addition, the minimum width of any lot shall be 20 feet.

Until 1998, Houston's municipal land use code set the minimum lot size for detached single family residences at 5,000 square feet (465 square metres). In addition, the municipality made it impossible for developers to build large numbers of attached single family homes such as townhouses because it required townhouses to sit on at least 2,250 square feet (209 square metres) of land (Siegan, 1972). The city's townhouse regulations were significantly more restrictive than those of other American cities (Allbee, 1998; Skrzycki, 1983). The townhouse regulations and minimum lot size requirements meant that almost all single family development was low density (i.e. 8.7 houses per acre (21.5 per hectare)), and it was not uncommon to find only two residences per acre (Williams, 2003). These requirements may have unsustainable impacts on urban development. For instance, such low density: makes improved public transit impractical (Nichols, 1992; Hanson, 1999); increases the cost of providing infrastructure and public utilities such as water and sewer services (Speir and Stephenson, 2002), and: to certain extent encourages population growth to shift away from the city centre.

In 1998, the municipality amended the minimum lot size requirement regulations such that the 5,000 square foot minimum now applies to areas outside Interstate Highway 610 (I-610), which is about five miles from downtown Houston. Within the I-610 ring, the minimum lot size has been decreased to 3,500 square feet (325 square meters), and the minimum lot size for townhouses has been changed to 1,400 square feet (130 square metres). However, given that only 1.4% of city dwellings were built in 1998 (U.S. Census Bureau, 2004) and that about 25% of Houston residents live inside the I-610 highway (Roth, 1991), the impact of the amended regulation on urban development has been limited from the beginning.

The reform of Houston's land use policies was a response to the real estate industry in the city. In the late 1990s, homebuilders urged the city to allow more compact development through reducing lot sizes when the city was rewriting its subdivision ordinance (Schwartz, 1998). Developers and homebuilders did make it happen. Those changes have recently resulted in some positive development, particularly in the downtown area: townhouses are showing up throughout Houston's inside I-610 area, inner city population is starting to grow, and urban land value is rising significantly. The change featured a mini-boom of loft conversions and townhouses that has transformed some of the derelict central city areas into one of Texas's fastest growing residential neighborhoods. The affluent and middle classes have begun to return to inner city neighborhoods.

Minimum Parking Requirements and Setbacks

Chapter 42 articulates that each development plat containing a multifamily residential development needs to provide off-street parking spaces. For efficiency, the parking spaces required per unit is 1.25; for one bedroom, the requirement is 1.333 per unit; for two bedrooms, the requirement is 1.666; and for three or more bedrooms, the requirement is 2. Each multifamily residential development is also required to provide open space. For efficiency, the square feet of open space required per dwelling unit is 200; for one bedroom, the requirement is 240; for two bedrooms, the requirement is 320; for three bedrooms, the requirement is 440; and for four bedrooms, the requirement is 500. Each area provided as open space is at least 20 feet wide by 60 feet long.

Apartment buildings must provide 1.333 parking spaces for each 1 bedroom apartment, meaning that property owners must supply more than one parking space for every apartment even though 17% of Houston renters do not even own one car (US Census 2000). Houston bars must accommodate drivers by providing 10 parking spaces for each 1000 square feet gross floor area. Furthermore, the city also requires that structures abutting major thoroughfares be at least 25 feet from the street, according to its minimum building line requirement. The combination of mandatory setbacks and minimum parking requirement limits the population density in the case of residence uses, and the employment density in the case of business and commercial uses. Landlords pass at least some of the cost of parking spaces on to society through higher prices for goods and services. The costs of parking lots are paid for not only by drivers, but also by residents, taxpayers, and customers. Large parking lots increase building costs and get passed through to the consumer, sometimes through higher housing unit rents or higher costs at the grocery stores. In contrast, some cities such as Pasadena, Seattle, Portland, and Boston are making progress by revamping parking regulations, charging more for on-street parking, and adjusting the parking lot requirement in new developments. In Portland, maximum parking limits vary with the distance from light-rail stations, meaning there is less parking required near the stations, more required several blocks away. Iowa city sets aside land for parking to be built only if it is really needed has meant minimum parking requirements are waived or relaxed (Table 4).

Table 4: Houston's Minimum Building Line Requirements (Source: City of Houston, 2007. p. 2900).

	<i>Urban Area</i>	<i>Suburban Area</i>
Central Business District	0 feet	NA
Abutting Major Thoroughfare	25 feet	25 feet
Single-family Lot Backing on Major Thoroughfare	10 feet	10 feet
Abutting Major Thoroughfare with Planned ROW of 80' or less		
• General	15 feet	NA
• Retail Commercial Center	5 feet or 0 feet according to another relevant standards	NA
Collector and Local Streets		
Not Single-family Residential	10 feet	10 feet
• Nonresidential Across from Single-family Lots with Platted Building Line greater than 10'	Lesser of 25 feet or greatest building line on single-family lots	Lesser of 25 feet or greatest building line on single-family lots
Collector Street-single-family Residential	10 feet, Principal Structure 17 feet, Garage of Carport Facing Street 5 feet	25 feet Front 10 feet Side and Back
Local Streets- Single-family	10 feet, Principal Structure 17 feet, Garage or Carport Facing Street	20 feet Front 10 feet Side and Back
Residential	5 feet	10 feet 10 feet both sides of corner lot
		0 feet, if vehicular access is from public alley
Private Streets	5 feet for habitable structure	5 feet for habitable structure

Minimum Right-of-way Widths and Miles of Freeways

Houston's land use code Chapter 42 requires that major thoroughfares must have a 100 feet unobstructed right-of-way for traffic, and all other streets must generally have a 50 to 60 feet right-of-way (Table 5). With the addition of the usual 4 feet wide sidewalk on both sides of streets, Houston's wide streets contrast with most American streets which are around 35 feet wide or even narrower (Colby, 2000; Coden, 2003; Swift, 2003). The SmartCode (a walkability-oriented model zoning code) even proposes streets with as few as 10 feet of pavement in residential areas and as few as 16 feet in mixed-use areas. Wide streets reduce the amount of land available for housing and commerce, and reduce residential and employment density.

Table 5: Houston's Minimum Right-of-Way Requirements (Source: City of Houston, 2007. p. 2894).

Major thoroughfares	1) The lesser of 100 feet or the right-of-way specified by the street hierarchy classification established by the major thoroughfare and freeway plan; or
	2) 100 feet for streets designated on the major thoroughfare and freeway plan for which a street hierarchy classification is not established
Collector streets designated on the major thoroughfare and freeway plan	The right-of-way width established by the major thoroughfare and freeway plan
Other collector streets	(1) 60 feet; or
	(2) 50 feet if all properties on both sides of the collector street consist of single-family residential lots that do not have driveway access to the collector street.
Local streets	(1) 50 feet if adjacent to exclusively single-family residential lots; or
	(2) 60 feet if adjacent to any other development
Public alleys	20 feet

(Note: There are some street width exception areas. For instance, for the central business district additional widening is not required unless the existing right-of-way is less than 50 feet. Also an area that has block lengths of 600 feet or less and paved public streets with right-of-way of not less than 50 feet wide with equivalent levels of vehicular traffic, is eligible for designation as a street width exception area.)

Houston has more overall freeway mileage than other American regions of comparable size. With only about 10% more population than the Boston urbanized area, Houston has almost twice as many lane-miles of freeway (Houston's 2,460; Boston's 1,310), and about the same lane-miles as Chicago with less than half its population (Chicago's 2,655) (Texas Transportation Institute, 2003). The large mileage of freeway nevertheless does not help transportation situation as Houston's roads are more congested than those in either Boston or Chicago. Houston is known as one of the most congested cities in the country. The low density development, little by way of compact urban form, the shift of development from city centre to urban fringe and suburbs, and the lack of mass transit have resulted in private vehicle-dependent lifestyles. The 2004 average household in Houston spends \$9,566 per year on transportation, which is over \$3,000 per year more than residents of Boston metropolitan area (Surface Transportation Policy Project, 2004).

Non-governmental Sector Efforts on Land Use Control

Homeowners Associations and Deed Restrictions

Homeowners associations are private organizations, who create rules and regulations (e.g. deed restrictions) that are enacted to protect the property values, amenities, and

homeowners' quality of living in a neighborhood. Texas is known as one of the states (along with California, Arizona, Florida) with a longer history of homeowners association activity (Pena, 2002). The state has developed more detailed laws regarding homeowners association governance and the regulation of individual behaviour. A homeowners association is most commonly created by a developer or house builder even before a community is built (Berry, 2001; Jacobs, 2005). They play an important role in curbing the effects of the lack of zoning (Berry, 2001; Martin, 2004). Deed restrictions, landscape ordinances, and regulations formed by these organizations shift the burden from the public to the private sector. For the city government of Houston, homeowners associations reduce costs and take on some of local government's responsibilities. For homeowners associations, the declaration of covenants, conditions and restrictions are the governing documents. Homeowners association regulations like deed restrictions can go beyond land use controls. They may address such matters as parking, sign posting, exterior colours, landscaping, architectural standards, play equipment, and décor (Blakely and Snyder, 1997; Hyatt, 2000; McKenzie, 1994). City land use regulations such as zoning ordinance have similar function in regulating land uses but without the level of details that govern individual property choice in homeowners associations' regulations such as deed restrictions (Nelson, 1999).

While zoning is enforced by city law, deed restrictions are usually enforced by civil lawsuits. The authority to enforce deed restrictions rest with the Deed Restriction Compliance Committee, with the assistance of the City of Houston Legal Department, Justice of the Peace Courts, and the Harris County Attorney. The Restrictions may be amended at any time by an instrument executed by the owners, of a majority (50% + 1) of lots in the Subdivision having agreed to do so. The purpose of the homeowners/neighborhood association is to maintain the residential character of the community, and to promote the civic and social welfare in the area. In the early 1990s, it was reported that about 50 to 60 percent of Houston's neighborhoods had viable deed restrictions in place in a study conducted by Rice University (Kelsey, 1992). From a different, but more recent source, only 30 percent of Houston's neighborhoods have viable deed restrictions, the other 70 percent are mostly low- to moderate- income neighborhoods where developments might move in (Hudson, 2007). Deed restrictions are usually valid for 24 to 30 years after which they have to be renewed or the deed restrictions will be invalid. If a deed restriction gets expired, development may come in. Even the development on the site without deed restriction may draw protests from the nearby property owners where there is a deed restriction. In 2006, a developer bought a 1.7-acre parcel for a \$100 million 187 condos project at the intersection of Bissonnet and Ashby streets occupied by 67 outdated apartments (not governed by any deed restriction) near the pricey homes of the Southampton and Boulevard Oaks

neighborhoods which have deed restrictions. The project has appalled the owners of the pricey homes and put local politicians in a hard time. The affluent residents hire a lawyer and complain that the condo tower will flood Bissonnet and Ashby with traffic, block sunlight from their homes and lower their property values. The City suggests the developer to scale back or cancel the development, on which the developer strongly disagrees. However, without zoning laws to regulate land use, and in this case without deed restriction on the development site, the city can do little to thwart the project other than apply traffic restrictions.

Super Neighborhoods

As defined by the City of Houston's Planning and Development Department, 'a Super Neighborhood is a geographically designated area where residents, civic organizations, institutions, and businesses work together to identify, plan, and set priorities to address the needs and concerns of their community' (City of Houston, 1999). By getting residents of individual communities to focus their attention on areas that do not affect only their immediate neighborhood or subdivision, they are encouraged to broaden their communities by identifying, prioritizing, and addressing the needs and concerns of the wider neighborhood (City of Houston, 1999). Currently there are 88 super neighborhoods covering the whole city of Houston, some of which has been encouraged by the city to form Super Neighborhood Councils. These councils serve as a forum where a representative group of residents and stakeholders can discuss issues impacting on their communities, reach a consensus on projects, and develop a Super Neighborhood Action Plan for community improvements.

Super Neighborhoods are part of a city of Houston initiative giving community members more input into city government policy making, budgeting, planning and capital improvement projects in their part of town. With the help from the representatives from the city of Houston for setting up super neighborhoods, the Super Neighborhood format creates strength in numbers. Many civic groups works as individual entities with limited results and visions. When they band together around shared issues they have a great deal more power. It also helps them to think of solutions that not only address their immediate area but work to solve the larger problems. Besides easier communication with city officials and organizational resources from the city, official recognition of a super neighborhood would make the city more likely to include that group's requests for projects on the city's capital improvement plan. The boundaries of the super neighborhoods used a variety of elements including natural boundaries, freeways and major thoroughfares that divided areas, subdivision lines in some cases, and other built elements.

However, there is not a simple definition of “neighborhood”. Some neighborhoods have distinct boundaries while others don’t. The boundaries were drawn and then distributed to district city council members for comments. There is a great deal of flexibility built into the system as each neighborhood has a slightly different story, need and resources. The city suggests that stakeholders come from as many sectors as possible (businesses, faith-based groups, schools, etc.) because the success of the Super Neighborhood will be determined in part by how broad their support is in the community.

The super neighborhood deals with neighborhood concerns as environmental amenity, neighborhood characteristics, educational and recreational facilities, senior citizen housing and affordable housing. However, not every super neighborhood protest succeeds. In 2005, the Alief super neighborhood protest against a subdivision proposed on a former landfill did little to dissuade the Houston Planning Commission from approving several requests by the developer, when developer SHRD Partners wants to build a 730-unit subdivision on a 138-acre dump site in Alief on the north side of Bissonnet Street between Cook Road and Kirkwood Drive. The bulk of the property consists of the former Doty Landfill (with the documented presence of methane), which was officially registered as a closed solid waste facility with the state in January 2001. Only after the commission’s approval, can the developer go seek from a series of permitting decisions before any construction can begin.

Super neighborhoods also have influences on built forms and density. Overbuilding can cause a reduction in property values, and some super neighborhoods intend to find ways to change deed restrictions to avoid the problem to keep property values intact. In 2004, neighborhood members in Spring Branch Super Neighborhood try to make the changes so that developers don’t replace small houses with enormous ones that reach the property line. In other words, deed restrictions need to be changed in order to better control the sort of building that goes on in a neighborhood. Another case in the Fourth Ward, developers demolished homes to build upscale residential developments and the Houston Independent School District acquired a block of residential land for future schools. In 2005 its neighbor MacGregor Super Neighborhood took the case as a potential threat to their community and tried to preserve their community’s characters by distributing fliers and getting together with leaders of civic associations and homeowners associations of their area and the nearby ones (Martin, 2005). Similarly, Spring Branch West Super Neighborhood requested the developers of two residential projects to make design changes of their plans. The neighborhood’s main concern is about the density of a proposed subdivision and a 398-unit apartment complex Riverway being constructed in the area

off Bunker Hill by Trammel Crow. They asked if Riverway would consider doubling the size of the lots, decreasing the number of homes and increasing the starting price (Brown, A. D, 2006).

Super neighborhood is a neighborhood oriented government which makes government participatory and more importantly driven by the neighborhoods. The idea is to make government more accessible and responsive to the public. But achieving that goal on a scale the size of Houston city is in fact far more complex. Articulating the concept and putting it into action has proved more difficult than Mayor Brown, the creator of Super Neighborhood initiative, could have foreseen. In the meantime, the city as a whole already has nine district council members operating at least one fully staffed district office handling neighborhood oriented issues. So some see super neighborhoods as one more layer of bureaucracy and prefer to work thorough traditional relationships with district city council members (Mason, 1998). After hundreds of meetings and dozens of plans, super neighborhood program is having yet to yield a single large project to which residents can point and say, “we did this.”. Critics argue the Brown administration has undercut its own initiative by not committing the resources that have made similar programs succeed in such cities as Seattle and Tacoma Washington. The only place where super neighborhoods will benefit the city of Houston is probably going to be the districts where there are very few homeowners associations. There super neighborhoods, in one of their many roles, can voice the concerns that would have otherwise been raised by homeowners associations. According to planning department figures, the city received nearly 3,200 Super Neighborhood Action Plan (SNAP) requests in 2002, about half related to routine maintenance, such as new street signs. Many critics suggest that the councils should focus more on transportation and affordable housing issues. From a political perspective, Super Neighborhood might be such an initiative that poses low political risk to Mayor Lee Brown, and produces more substantial additional political capital rather than substantial improvement at neighborhood level.

Conclusions

Initially defined by its natural advantages for oil and gas in history, Houston’s land use was, and is, determined by transportation infrastructure, mega projects, private land use controls, and a few land use regulatory policies. Large federal funded infrastructure such as Port of Houston, Houston Ship Channel, Big Inch and Little Inch oil pipeline, interstate highways, airports, and NASA Space Center, partially defined the city’s historic landscape. More recently, various large projects still dominate urban form, with significant government intervention and public funding resources.

The civil society organizations in Houston play important roles in land use due to relatively low level of leadership by and participation of the public sector. They work to fill the public sector vacuum. Deed restrictions have been principal reasons why Houston's physical appearance and land use patterns are not greatly different, at least in a general sense, from those in other major cities. For the last decade, super neighborhood program also addresses land use issues such as environmental amenity, neighborhood characteristics, built forms and density. Despite the fact that super neighborhood program currently has many limitations, the improvement of the program will have significant contribution to the neighborhoods, especially where homeowners associations are not in place.

There are some potential land use compatibility problems with deed restrictions. As subdivisions have grown older and as deed restrictions expire, other uses have encroached upon them resulting in a change in land use character. For instance, heavy commercial and industrial uses exist alongside single family residences; small bungalows are adjacent to commercial, industrial and vacant land. In many cases the residential uses are directly adjacent to heavy industries, toxic sites, and landfills. Such land development strategies might satisfy the pro-growth ideology, but it fails to alleviate the living circumstances of the poor, and transfers the costs generated from growth to them (Vojnovic, 2003).

While Houston is becoming a polycentric city with growing economic and demographic diversity, a key problem with the deed restrictions is their variation from area to area in content and enforcement. In particular, deed restrictions in minority and/or lower income communities might simply be ignored by landowners and developers. This is a critical problem given that over 500,000 citizens (24% of 2.1 million Houston residents as of 2006) are living at or below the poverty line, which ranks Houston worst among major Texas cities (Brown, P., 2006).

If conventional planning means significant governmental intervention in the public interest for land use and related socio-economic problems of development and growth, then Houston is indeed 'unplanned'. Planning in Houston has been privatized largely due to the pro-growth coalitions among local businesses and political elites and the dictates of the investment market and economic growth. Houston's lack of government zoning ordinance and generally weak planning laws have been used as a defence of the viability of planning with limited public intervention. The co-existence of private planning and public intervention was supported by the belief that economic growth would result in the correction of dysfunctional conditions on an ad hoc basis (Fox, 2003). Such planning is clearly not without social and environmental costs.

The Houston case demonstrates the importance of examining local variations and indigenous political cultures that affect urban form. Houston's planning and development

indicates that local politics is a primary factor in its development. Local political history and culture determine distinct urban development patterns. Local elites devise strategic plans and make political choices that shape the city's development.

The privatization of land use planning, with weak and partial regulations and controls, and no formal government zoning ordinance has led to a unique form of development in Houston. It is also one that is changing. It favours the wealthier residents who have the power, education and resources to maintain a high quality for their own environment through enforcing private covenants and controlling land use in their neighborhoods. However, where covenants expire, or the communities are too disadvantaged or too poor to wield sufficient influence, powerful private interests can either ignore private covenants or overcome them. The result is interesting. In the richer areas, private covenants result in environments that are effectively strictly zoned, and effectively become single use mono-cultures. In the poorer areas, where covenants are less likely to be enforced, mixed use areas begin to emerge, with many of the much claimed urban design benefits of viability and vitality, but with social and economic disbenefits of inappropriate mixtures of uses that may over-ride community amenity.

Up till now, Houston is still a free enterprise city. Houston exemplifies a unique major city without land use zoning. Transportation plans and large projects define the main framework of its urban form. Deed restrictions fill the gap of non-zoning, but not without problems. Private land use controls are weak in addressing social and environmental concerns in lower income communities. Downtown redevelopment brings people back to inner city but creates gentrification. Hence as Houston develops further toward a quintessential world city, if public sector planning and maybe zoning is still impossible for the city to achieve, a new type of planning in a free market context needs to be developed to address current problems. Impediments to zoning reform are predominantly political, social and economic. Nevertheless, if the end result of land use control reform is the imposition of a decision-making and regulatory bureaucracy on top of something that currently works well, it could create imbalances and inefficiencies that would try to force the wrong things in the wrong places at the wrong time. Houston needs flexibility and adaptability to allow dynamic growth and urban evolution.

CHAPTER V

LAND DEVELOPMENT CONTROL AND URBAN FORM IN HOUSTON'S THREE SUPER NEIGHBORHOODS

This chapter uses a combination of quantitative and qualitative approaches to examine the urban form and land use patterns of three super neighborhoods in Houston. Using statistical cluster analysis, it first clusters Houston's block groups into three categories based on the socioeconomic characteristics of those block groups. Those socioeconomic factors include race/ethnics, educational attainment, household income, homeownership, housing density, housing value, and rent. It then uses super neighborhood boundaries to group three sets of block groups as case study super neighborhoods—River Oaks, Independence Heights and Montrose. The cases represent both urban and suburban super neighborhoods. More importantly, they represent three types of land use patterns with different levels of property rights attenuation developed from their history, population, and socioeconomic characters in their own. Applying Geographic Information Systems (GIS), the study develops quantitative measures of urban form and land use patterns-street design and circulation systems, density, land use mix, accessibility, and pedestrian access- to conduct both comparative and chronological analysis for three case study super neighborhoods. Such quantitative approach is followed by a qualitative investigation of the super neighborhoods attempting to address why and how such quantitative results are formed over the decades. The chapter concludes with discussions over the limitations of the study, policy implications from the findings on urban form and land uses, and some contributions to the debate over urban form and government intervention in better land use patterns.

Case Study Neighborhoods

The interaction between socioeconomic status of a place and its spatial variation has been acknowledged by research work. For instance, Galster and Killen (1995) theorize the interaction of three structures-social, economic, and spatial, and argue that such interaction produces structural socioeconomic diversity of individuals in different places. Furthermore, the uneven resource distribution creates a socio-spatial structure where economic forces and land use practices reinforce each other to produce landscapes of inequality (Squires and Kubrin, 2005). More explicitly, socioeconomic status indicators such as educational attainment, race and ethnicity, household income distribution, housing options, homeownership rates, housing density, land-use mix and property status are some of the key reasons that result in neighborhood spatial

variation. In this study, census block groups were used as the smallest spatial analysis unit of data collection. While it would be preferable to use census block as measurement unit, census block group is a relatively homogeneous area that can capture the characteristics of a neighborhood (Song and Knaap, 2004; Bates, 2006).

This analysis used US Census data 2000 for race/ethnic population¹, education attainment for population over 25 years old², median household income, owner or renter occupied housing units, housing unit density³, median contract rent, and median value of owner-occupied housing units to define the socioeconomic status of a neighborhood. A note of caution is that the city limit boundary of Houston is not always consistent with the boundaries of the block groups. Because land use control policies from the City of Houston only apply to the areas within the city limit, the analysis only includes the block groups that are completely contained by the city limit. As a consequence, there are 1018 block groups in total. Most of them are within Beltway 8 (Fig. 1).

¹ There are five categories for race/ethnicity. They are (1) Not Hispanic or Latino- White alone; (2) Not Hispanic or Latino- Black or African American alone; (3) Not Hispanic or Latino- Asian alone; (4) Not Hispanic or Latino- others, which include Not Hispanic or Latino- American Indian and Alaska Native alone, Not Hispanic or Latino- Native Hawaiian and Other Pacific Islander alone, Not Hispanic or Latino- Some other race alone, and Not Hispanic or Latino- two or more races; and (5) Hispanic or Latino.

² There are four categories for educational attainment. They are (1) No High School Education, which includes all that do not even have high school education; (2) High School Only Education, which includes high school graduate and some college education; (3) Bachelor's or Associate degrees; and (4) Graduate degrees, which include Master's, Professional and Doctorate degrees.

³ There are five categories for housing unit density. They are (1) detached units (single family); (2) multifamily low housing unit density, which includes attached units, 2 units, and 3 or 4 units in structure; (3) multifamily medium housing unit density, which includes 5 to 9 units, and 10 to 19 units; (4) multifamily high housing unit density, which includes 20 to 49 units, and 50 or more units in structure; and (5) mobile home.

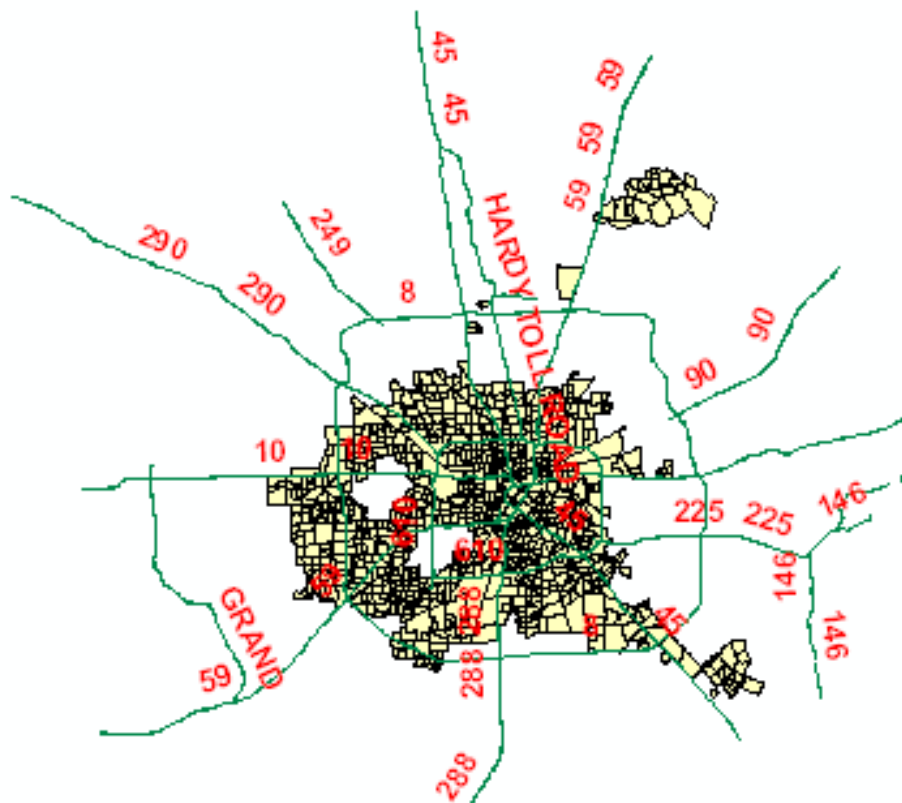


Fig. 1: Block Groups that are completely within the City Limit.

In order to have a detailed analysis of natural grouping, K-means cluster analysis was used to group three clusters of block groups. Three clusters were chosen based on a conceptual assumption that there might be three types of land use controls in the city--strictly controlled, least controlled, and one with land use controls in between. Those three types of land use controls resulted in three different land use patterns. Cluster analysis identified homogeneous subgroups within a population, minimizing within-group variation and maximizing between-group variation. The analysis merged similar analysis units into groups. The final cluster centers table shows the socioeconomic conditions of three groups⁴ (Table 6 and Table 7). Among those cluster groups, Group 3 has the highest non-Hispanic White population percentage (78.3%), extremely high

⁴ In order to capture the average educational levels and average housing unit densities in the neighborhoods, four types of educational attainment are recoded as 1 to 4, where 1 represents No High School Education, and 4 represents Graduate Degrees. Similarly, four types of housing unit densities are recoded as 1 to 4, where 1 represents detached units in structure, and 4 represents high housing unit density in structure. As a special housing structure, mobile is not recoded. As a consequence, the resulting variables will be continuous variables, where a larger number reflects a higher average level of education, or a higher average level of housing unit density.

median household income (\$135,255, which is almost twice of that of Group 1, and four times of that of Group 2), the highest owner occupied housing unit percentage (68.5%), the highest median contract rent (\$1032), and extremely high median housing value (\$641,747, which is more than three times of that of Group 1, and ten times of that of Group 2. Houston's median housing value is \$79,000), and the highest education level (1.49). The statistics demonstrates that Group 3 is a cluster of upper-end income neighborhoods that are the richest in the city. However, such neighborhoods are very few in Houston, with only 17 block groups. Group 1 has high non-Hispanic White population percentage (72.2%), high median household income (\$ 70,483), high owner occupied housing unit percentage (59.9%), high median contract rent (\$841), and high median housing value (\$214,218), and high education level (1.43). The statistics demonstrates that Group 1 is a cluster of high- to moderate- income neighborhoods. Group 1 has 173 block groups. The largest cluster is Group 2 which has 828 block groups. Group 2 possibly represents the majority of Houston's neighborhoods which has a high percentage of minorities (especially non-Hispanic Black and Hispanic), moderate household income (\$32,962), high rent occupied housing unit rate (50.2%), low median contract rent (\$469), low housing median value (\$62,896), and relatively low education attainment (0.91).

Table 6: Final Cluster Centers.

	Cluster		
	1	2	3
Not Hispanic White %	72.2	22.0	78.3
Not Hispanic Black %	6.2	31.2	5.1
Not Hispanic Asian %	5.4	3.9	1.8
Not Hispanic Others %	2.0	1.4	2.2
Hispanic %	14.2	41.4	12.6
Median Household Income	70483	32962	135255
Owner Occupied %	59.9	49.8	68.5
Renter Occupied %	40.1	50.2	31.5
Mobile %	.1	1.2	.2
Median Rent	841	469	1032
Median Value	214218	62896	641747
Average Education	1.43	.91	1.49
Average Density	1.93	1.86	1.87

Table 7: Number of Cases in Each Cluster.

Cluster	1	173.000
	2	828.000
	3	17.000
Valid		1018.000
Missing		.000

Mapping the cluster analysis results based on the block groups revealed a spatial pattern consistent with spatial socioeconomic distribution of Houston (Fig. 2). The majority of the Group 3 block groups clusters in Greater Uptown and River Oaks, which are the well known upper-end income neighborhoods within the city limit of Houston. The map shows that the richest neighborhoods are near the Houston city center, along the west portion of I-610. The majority of the block groups of Group 1 clusters on the west of Highway 59 and Highway 286 and extends along the south of Interstate 10. In addition, the block groups in Kingwood neighborhood (incorporated by the City of Houston in 1996) and Clear Lake (incorporated by the City in 1977) are among Group 1. Those were master-planned neighborhoods before their incorporation into Houston.

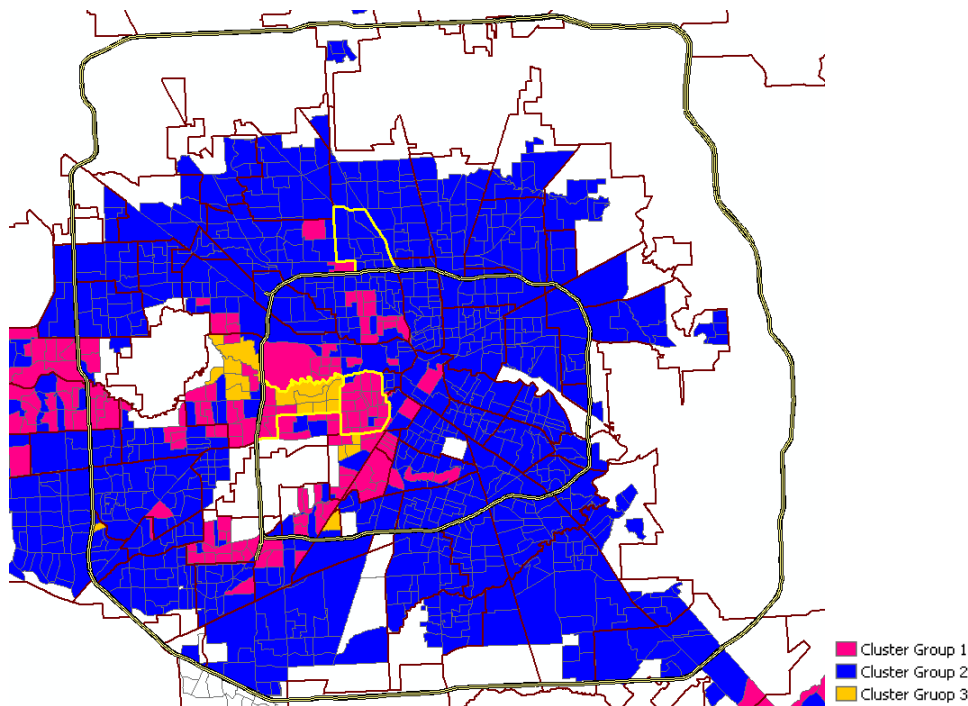


Fig. 2: Spatial Distribution of Three Clusters of Super Neighborhood Block Groups.

The examination of spatial distribution of those cluster groups helped to further identify potential neighborhoods for case studies. It was apparent in most cases those block groups with similar socioeconomic status cluster together due to their socioeconomic homogeneity. However, the block groups sometimes were too small to capture the characteristics of land use of a neighborhood, especially when this research attempted to analyze land use diversity of the whole city. Representative neighborhoods that cover a reasonable size of neighborhood area were desirable. Super neighborhood used by the City of Houston's Planning and Development Department was helpful to define study areas while it could still maintain socioeconomic status homogeneity of the block groups. However, super neighborhood boundary defined by the City does not perfectly match block group boundary in some cases. As a consequence, super neighborhood was used as a reference boundary to select block groups. The analysis used super neighborhood boundaries to exclude those super neighborhoods that do not have complete block groups and those that have two or more socioeconomic statuses within super neighborhood. As discussed, both Greater Uptown and River Oaks were potential cases for Group 3 neighborhoods. Greater Uptown block groups within Greater Uptown super neighborhood contain all three different types of block groups. Therefore, River Oaks super neighborhood is better as a case study super neighborhood, even though it is necessary to acknowledge that River Oaks super neighborhood includes about 40 percent of its total area that belongs to Group 1. For Group 1, there were two super neighborhoods potentially ideal for case study—Montrose and Texas Medical Center. Texas Medical Center was excluded because its special institutional use may not make it a representative case. Rivers Oaks and Montrose were established in 1910s and 1920s, respectively. For Group 2, super neighborhood age was taken into consideration. Independence Heights was selected as a representative case for that group as the neighborhood was established in 1910s. It may also represent a case outside I-610 but within Beltway 8 (Fig. 3).

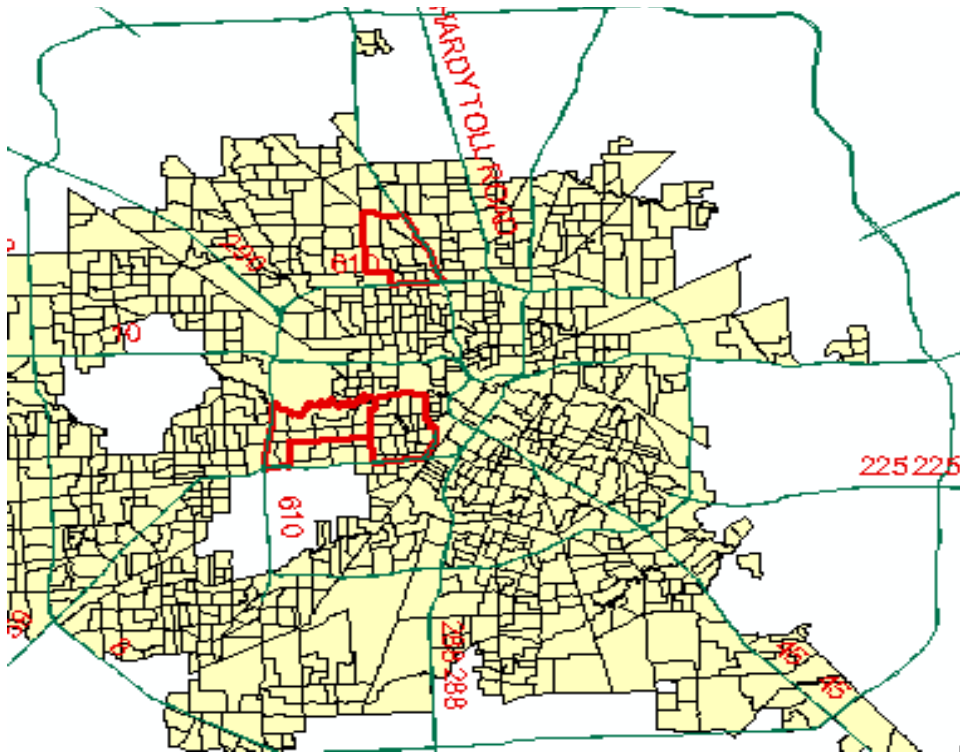
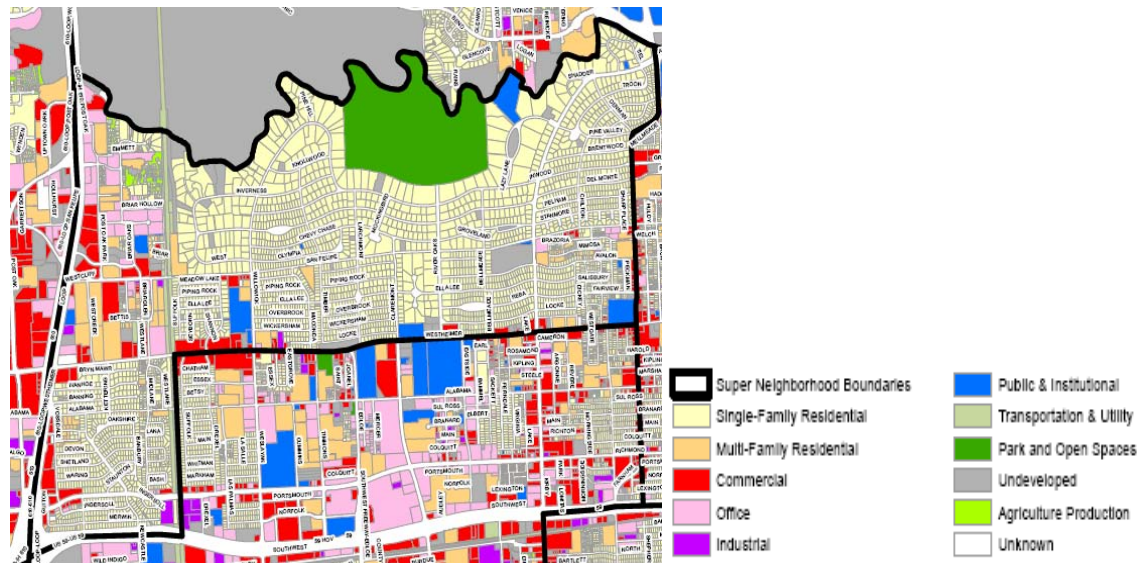


Fig. 3: Three Selected Super Neighborhoods: River Oaks (left in the middle along 610), Montrose (next to River Oaks), and Independence Heights (top along 610).

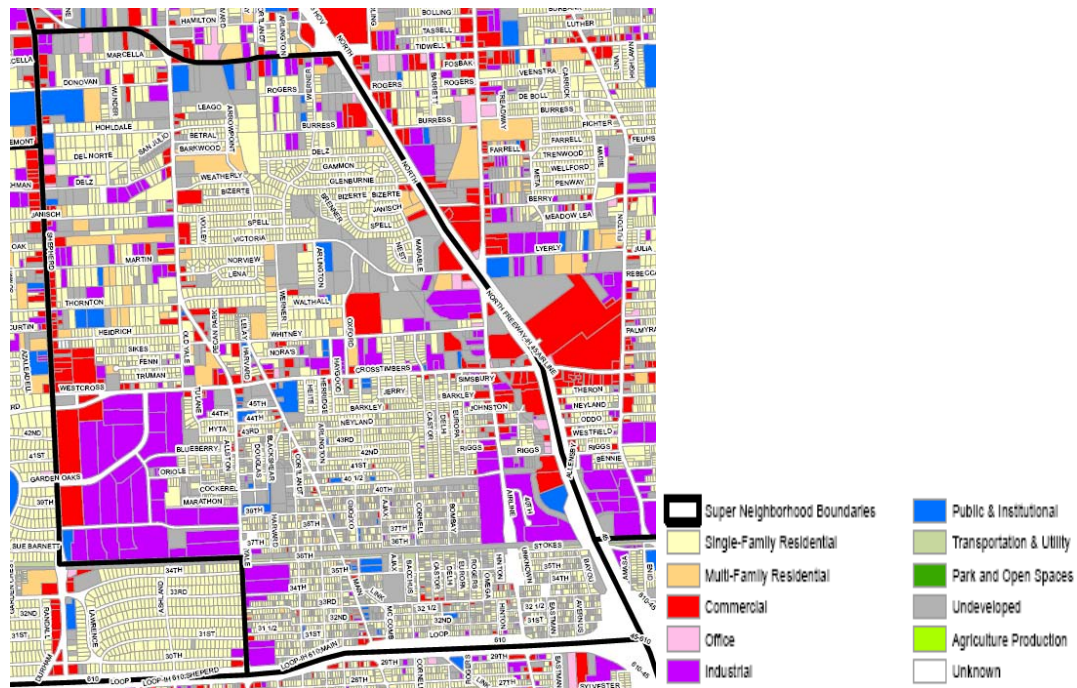
Table 8: Socioeconomic Status of Three Selected Super Neighborhoods (Source: US Census 2000).

Neighborhood Name	River Oaks	Independence Heights	Montrose
Totoal Population	14,313	14,206	28,015
White	85.7%	6.5%	67.6%
Black	1.7%	59.9%	3.6%
Hispanic	8.1%	32.5%	23.2%
Asian	2.9%	0.5%	3.8%
Other	1.5%	0.7%	1.7%
Educational Attainment			
Persons 25 years and over	11,320	8,734	21,976
No High School Diploma	3.5%	43.7%	13.1%
High School Diploma & higher	96.5%	56.3%	86.9%
Household Income			
Total Households	7,454	4,775	16,300
Below \$25,000	11.3%	53.8%	28.0%
Above \$25,000	88.7%	46.2%	72.0%
Labor Force			
Persons 16 years and over	8,657	5,873	20,321
Employed	97.6%	83.9%	96.4%
Unemployed	2.4%	16.1%	3.6%
Housing			
Total Occupied Units	7,401	4,772	16,239
Owner Occupied	51.7%	49.4%	29.7%
Renter Occupied	48.3%	50.6%	70.3%



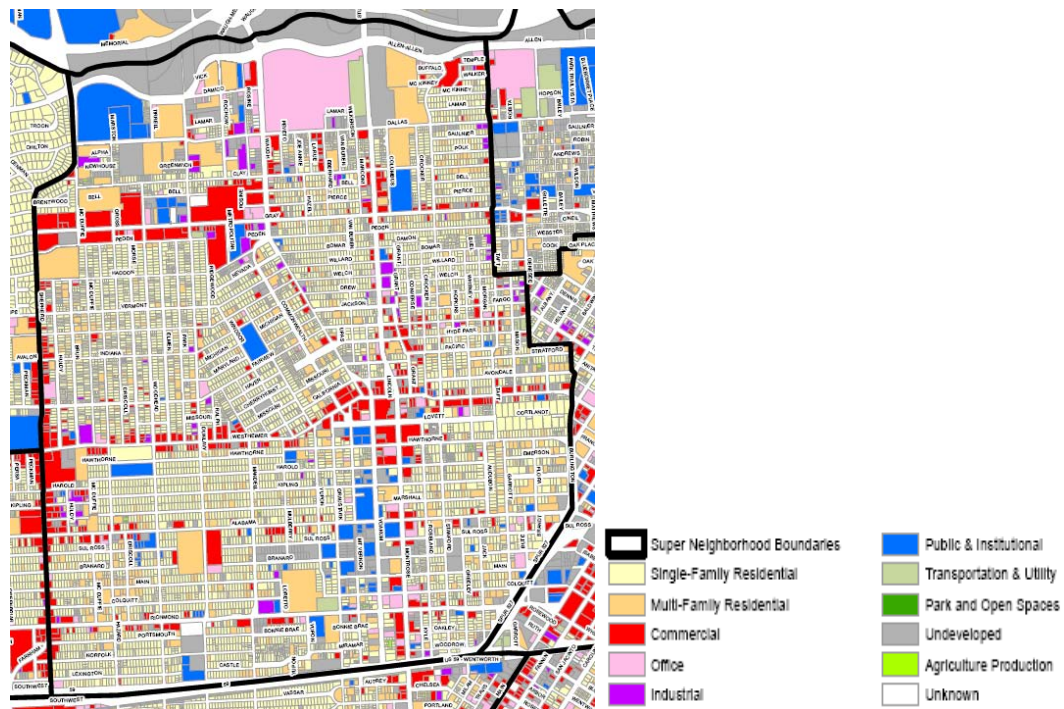
A. River Oaks Super Neighborhood.

Fig. 4: Current Super Neighborhood Land Use Maps.



B. Independence Heights Super Neighborhood.

Fig.4 continued.



C. Montrose Super Neighborhood.

Fig.4 continued.

When comparing the three neighborhoods ranging from controlled use (River Oaks), mixed use together with controlled use (Independence Heights), to mixed use (Montrose) (all will be further discussed later), a few socioeconomic differences were observed (Table 8). One of the most important factors that seem to relate to the level of deed restriction implementation is household income. Table 8 shows that 88.7% of River Oaks' residents have a household income of \$25,000 or more, higher than the other two neighborhoods. Deed restriction implementation is also associated with homeownership. River Oaks has the highest owner occupied housing (51.7%), much higher than the amount of Montrose (29.7%).

This direct observation suggests a relationship between the socio-economic and perhaps even the educational level of inhabitants and their ability, or willingness to enforce private restrictive covenants in their own interests (Fig. 4). In areas with fewer covenants, or where covenants expire, especially in less socio-economically advantaged areas, residents may not have the power, resources or education to enforce them themselves. Without covenant protection, residential land use may transform to high density residential use, commercial use or even industrial use. That might explain the highly mixed used and somewhat 'kaleidoscope' style land use pattern in Montrose. Overall, the comparison of three neighborhood plans shows that the socio-economic characteristics of different neighborhoods can make significant differences in the operation of deed restrictions and thus greatly influence the land use controls and land use patterns. Qualitative evidences from the three super neighborhoods in later sections further support the arguments. The comparison among three super neighborhoods raises the issue of the importance or influence of wealth. Wealth directly relates many socioeconomic factors such as race/ethnics, educational attainment, household income, homeownership, housing density, housing value, and rent. All those factors drive the differences in land use patterns. The institutional processes and procedures that have been erected at local levels to manage land development are fueled by this wealth. They are well developed and deeply ingrained. There is a strong and direct connection between this wealth and the quality of social services (schools, park and recreational facilities, libraries, police/fire protection, sewer and water treatment, transportation systems, etc.) provided in those neighborhoods. As discussed in previous chapters, ecological and environmental values will remain costs to be distributed and externalized to others in exchange for more immediate, monetizable benefits. Furthermore, there is also strong connection between wealth and property right tenure security. The argument of wealth and land use patterns also calls for new insights into how citizen-generated covenants can be used to protect the status quo or other important issues. All those factors drive the differences in land use patterns.

Spatial Measures of Urban Form

Quantitative research methods have been widely used to test changing land use patterns and forms (see for example, Carruthers, 2002; Nelson and Moore, 1996; Nelson, 1999; Song and Knaap, 2004; Zhang, 2001). However, quantitative research at neighborhood levels to examine urban form for those without growth management programs is sparse. Conventional quantitative research on urban growth compares suburban growth to central city growth in terms of the location of population growth (Chinitz, 1965), or focuses on the change of population density (Mills, 1980). Similarly, comparative research for urban area and urbanized land areas using population density has also been done (see for example, Fulton et al. 2002; Sierra Club, 1998). In more recent research Wassmer (2000) investigates the share of metropolitan population, employment, retail sales, farmland, poverty rates, and income levels for those that lived in the central city, the central county, and the urbanized area. All those studies provide little about urban form.

One of the policy-relevant quantitative approaches for urban form was developed by Allen (2001) using part of INDEX, a policy planning support system for forecasts of vehicle miles traveled, ambient air emissions, as well as employment and housing balance. Besides the information about density, nuclearity, and centrality studied in previous research, measures of transportation, housing and employment options, mixed use, and transit and public facility accessibility address more policy issues concerning residents and decision makers. Song and Knapp (2004) use approaches similar to Allen's to measure urban form at the neighborhood level (block groups as neighborhoods) for Washington County, the western portion of Portland.

Several measures of urban form are developed from the approaches used by Allen (2001) and Song and Knaap (2004). Using GIS, the study conducted spatial statistical analysis for the urban form for each of the three super neighborhoods over a two decade period (from 1985 until 2005). In addition, the statistical analysis compared the results among different neighborhoods. The urban form of the neighborhoods were measured by five dimensions: (1) Street design and circulation systems; (2) Density; (3) Land use mix; (4) Accessibility; (5) Pedestrian access.

The spatial data resources were US Census data, Harris County Appraisal District (HCAD), Gulf Coast Institute, and the statistical studies at neighborhood levels from Houston's Department of Planning and Development. Most data were available in City of Houston Geographic Information System (COHGIS) release 6 (1998), releases 9-11, and release 12 (2006). These DVD data dictionaries were developed by Information Technology Division of Houston Planning and Development Department. The data themes that were used are super

neighborhoods (SNBR in GIS database), parks (PARKR), buildings (BUILDING), parcel information (PARCEL), apartment information (APT.DBF in GIS database), commercial building information (BUILDINGS.DBF), historical land use information (1985-2005, LUSE.DBF), 2000 census block group (GRP 2000), and major roads (MJROAD). In addition, the bus stop data was from Houston Metro.

Street Design and Circulation Systems

They are measured by 1) Internal Connectivity: number of street intersections divided by sum of the number of intersections and the number of cul-de-sacs; the higher the ratio, the greater the internal connectivity. 2) Block Perimeter: median perimeter of blocks; the smaller the perimeter, the greater the internal connectivity. 3) Blocks: number of blocks divided by number of single family housing units; the more the blocks the greater the internal connectivity. 4) External Connectivity: median distance between Ingress/Egress (access) points in feet; the shorter the distance, the greater the external connectivity. This portion of the analysis uses the data as of December 2005 (Table 9).

Table 9: Street Design and Circulation Systems.

	River Oaks	Independence Heights	Montrose
Internal Connectivity	0.903	0.837	0.959
Block Perimeter (feet)	1585.79	1172.63	819.36
Blocks	0.120	0.146	0.169
External Connectivity(feet)	297.60	178.16	230.60

The results show that Montrose has better internal connectivity (0.959) and smaller block perimeter (819.36 feet) than the other two super neighborhoods do. When one uses blocks to measure internal connectivity, the results also indicate that Montrose (0.169) has the best internal connectivity. Both Independence Heights (178.16 feet) and Montrose (230.60 feet) have better external connectivity than Rive Oaks does (297.60 feet).

Density

Density is measured by 1) Lot Size: median lot size of single family residence in the super neighborhoods; the smaller the lot size, the higher the density. 2) Single Family Unit Density: single family units divided by the residential area; the higher the ratio, the higher the density. 3) Floor Space: median floor space of single family units in the neighborhoods; the smaller the floor space, the higher the density. This portion of the analysis uses the data as of December 2005 (Table 10).

Table 10: Density.

	River Oaks	Independence Heights	Montrose
Lot Size (s.f.)	9314.35	6324.11	4976.60
SFUD	2.784	4.758	7.066
Floor Space (s.f.)	3907	1246	2444

The results demonstrate that River Oaks has the largest median lot size (9314.35 s.f.). The size is almost twice of that of Montrose (4976.60 s.f.). Not surprisingly, Montrose has the highest single family unit density (7.066) among three super neighborhoods. With its large single family lot size, River Oaks also has large median floor space of single family units. In other words, River Oaks has large lots and big houses with large floor space. Despite that Independence Heights has larger median lot size than Montrose, the super neighborhood however has smaller median floor space of single family units. The differences in median lot size, single family unit density, and median floor space among three super neighborhoods are sharp. The results here clearly echo the significant socioeconomic statuses of three super neighborhoods. The median floor space for Independence Heights (1246 s.f.) is only half of that for Montrose (2444 s.f.) and one third of that for River Oaks (3907 s.f.), although Independence Heights has large lot size which could be attributed to its suburban location.

Table 11: Housing Units in Structure (Source: Census 2000).

Super Neighborhood Name	1 Unit Detached	1 unit attached	2 units	3 or 4 units	5 to 9 units	10 to 19 units	20 or more	Mobile Home	Boat/RV Van
INDEPENDENCEHEIGHTS	3,603	163	111	71	128	275	919	148	4
MONTROSE	3,954	2,076	1,951	2,018	1,679	2,045	4,758	0	0
RIVER OAKS AREA	3,318	499	97	175	302	428	3,415	0	0
CITY OF HOUSTON	364,905	42,105	16,323	32,534	46,999	64,550	206,896	7,703	363

The housing units in structure statistics (Table 11) indicates that the majority of residential land use in Independence Heights is for single family detached unit. There are some high-rise apartments in that super neighborhood. The number of mobile home in Independence Heights implies the existence of lower-income households in Independence Heights, while there is no mobile home in either River Oaks or Montrose. This observation is consistent with their better socioeconomic status than Independence Heights. Montrose has a wide variety of housing options, ranging from single family detached units, townhouses, to high-rise apartments. River Oaks mainly has two types of housing units--single family detached units and upper-end high-rise apartments.

Table 12: Housing Units - Year Structure Built (Source: Census 2000).

Super Neighborhood Name	99-00	95-98	90-94	80-89	70-79	60-69	40-59	39 or earlier
INDEPENDENCEHEIGHTS	0	52	15	221	932	1,261	2,467	474
MONTROSE	739	1,468	371	1,066	2,392	3,805	4,246	4,393
RIVER OAKS AREA	255	534	525	732	1,364	1,733	2,231	859
CITY OF HOUSTON	19,401	35,937	31,310	138,990	217,658	145,791	152,681	40,610

All three super neighborhoods were developed as early as the 1920s. Montrose has many more housing units built before the 1960s. There has been a good amount of new housing development since then. With other evidences from the analysis in later sections, the land use pattern changes and housing stock changes indicate that the parcels in Montrose has experienced residential to non-residential use conversion. At the same time, there might also be non-residential to residential land use conversion in addition to new housing unit development. In contrast, most Independence Heights' housing stock was built during the 1940s and the 1970s. Since then, the housing unit development has dropped significantly. There is no single housing unit developed in Independence Heights during the 1990s. This observation suggests that Independence Heights has experienced net population emigration during the last decade. Most River Oaks housing stock was built during the 1940s until the 1970s. Similar to the situation in Montrose, there has been a good amount of new housing development since then. Both River Oaks and Montrose seem to be popular as a good choice for housing. Independence Heights however seems to be a declining super neighborhood with respect to housing stock (Table 12).

Land Use Mix

Land use mix is measured by analyzing land use diversity 1) H_1 and 2) H_2 for the same equation (Song, 2005).

$$H = - \frac{\sum_{i=1}^s (p_i) \ln(p_i)}{\ln(s)}$$

Where H_1 = diversity index including single family residential units; p_i = proportions of each of the land use types such as single family residential, multifamily residential, industrial, public, and commercial uses, etc; and s = the number of land use types. The higher the value, the greater the land use diversity. Here $s = 9$, which include (1) single family residential; (2) multifamily residential; (3) commercial; (4) office; (5) industrial; (6) public and institutional; (7) transportation and utility; (8) park and open spaces; and (9) undeveloped.

Where H_2 = diversity index excluding single family residential units; p_i = proportions of each of the land use types such as multifamily residential, industrial, public, and commercial uses, etc; and s = the number of land use types without single family residential land use. The higher the value, the greater the land use diversity. Here $s = 8$, which include (1) multifamily residential; (2) commercial; (3) office; (4) industrial; (5) public and institutional; (6) transportation and utility; (7) park and open spaces; and (8) undeveloped. This portion of the analysis uses the data from 1985, 1990, 1993, 1996, 1998, and 1999 until 2005. Those are the only years that have historic land use data available for analysis (Table 13).

Table 13: Land Use Diversity Index.

Year	1985	1990	1993	1996	1998	1999	2000	2001	2002	2003	2004	2005
M H1	0.65712	0.70965	0.71893	0.72259	0.71650	0.74205	0.73828	0.73563	0.74224	0.74021	0.73955	0.76404
IH H1	0.65594	0.67224	0.67740	0.68732	0.68940	0.74415	0.74443	0.74478	0.75124	0.75350	0.75601	0.75214
RO H1	0.53508	0.58431	0.57871	0.60168	0.61031	0.61777	0.60839	0.60532	0.60718	0.60727	0.60510	0.60729
M H2	0.53329	0.57942	0.58749	0.59114	0.58536	0.61264	0.60925	0.60700	0.61369	0.61177	0.61115	0.63516
IH H2	0.52564	0.53831	0.54230	0.55196	0.55399	0.61166	0.61179	0.61174	0.61844	0.62072	0.62302	0.61894
RO H2	0.43622	0.47760	0.47326	0.49646	0.50427	0.51141	0.50354	0.50100	0.50265	0.50287	0.50099	0.50268

(Note: M = Montrose, IH = Independence Heights, and RO= River Oaks).

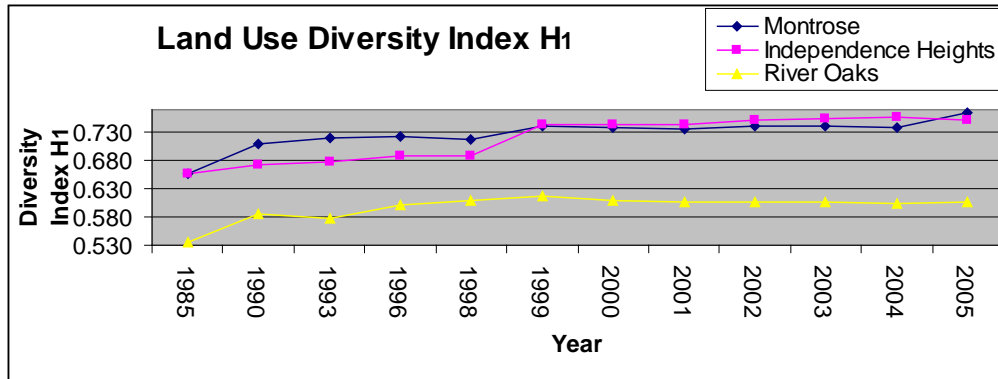


Fig. 5: Land Use Diversity Index H_1 .

The analysis of land use diversity change between 1985 and 2005 demonstrates that all three super neighborhoods have experienced land use changes toward more diverse uses (Fig. 5). The H_1 results for River Oaks show the lowest values among the three super neighborhoods. It means that River Oaks land use is always the most strictly controlled and then the least diverse. During the twenty years, River Oaks experienced two significant land use diversity increases. One is the increase from 1985 to 1990. The other is the increase from 1993 to 1999. The observation of the land use maps of those two periods indicates that the changes were mainly because of the office and commercial development in the northwest part of River Oaks super neighborhood, especially the portion along I -610. For other time period, land use diversity index for River Oaks did not experience any significant change, which means that land use was strictly controlled in River Oaks during that time. River Oaks' land use diversity index increased only 0.07 during the twenty years. Montrose had the highest land use diversity until 1999, when Independence Heights' land use diversity reached a similar point. Since 1999, the overall land use diversity pattern for Independence Heights gets flat, which means few land use diversity changes. Montrose however shows a pattern that the land use diversity index is likely to continue its increase. The land use diversity index for Independence Heights increased 0.10 during the twenty years. The land use diversity index for Montrose increased 0.11 during the twenty years. Land uses in both Independence Heights and Montrose are much less controlled than is River Oaks.

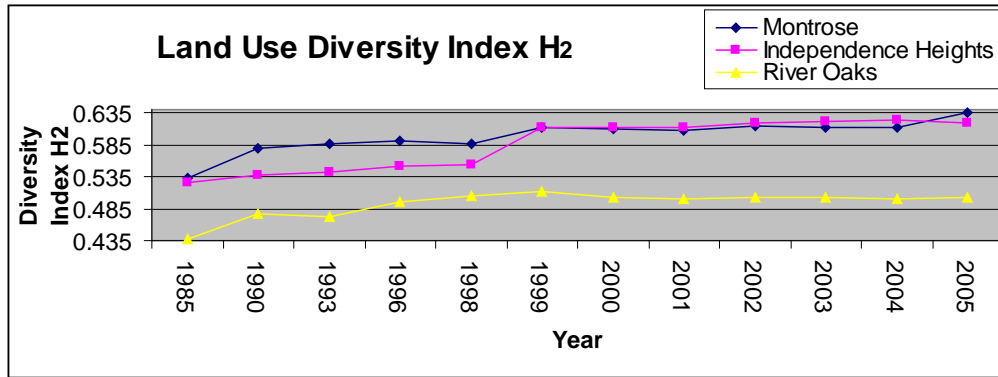
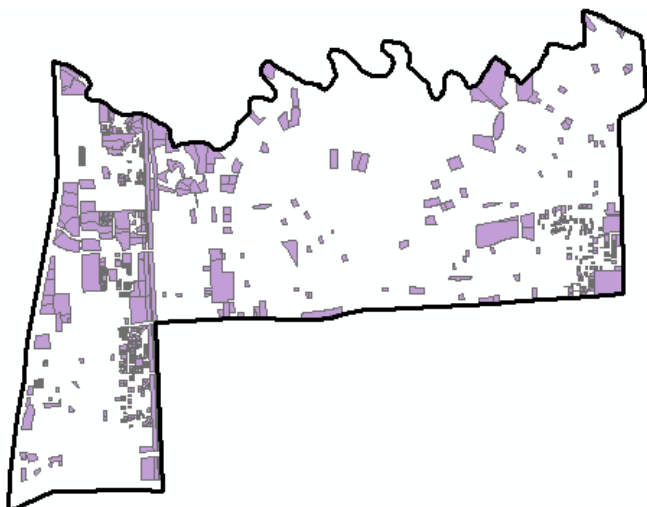


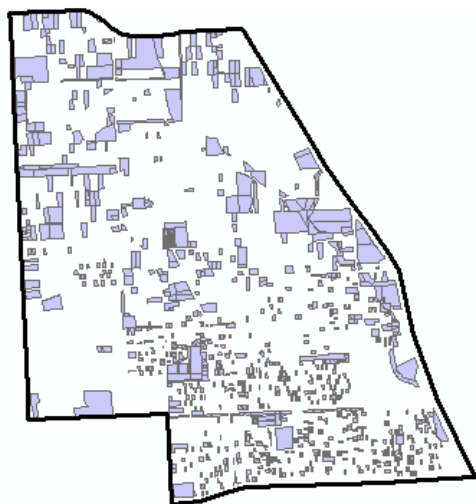
Fig. 6: Land Use Diversity Index H_2 .

The analysis results for land use diversity index H_2 show an overall trend similar to H_1 analysis results (Fig. 6). For non-single-family land uses, River Oaks still has less diverse land uses. Its land use diversity index H_2 increased 0.07 over the twenty years. Land use diversity index H_2 for Independence Heights increased 0.09 between 1985 and 2005. Montrose had an increase of 0.10 between 1985 and 2005. The H_1 and H_2 analyses indicate that land use analysis including single family residential use and land use analysis excluding single family residential uses produced consistent results. In River Oaks, land use has been strictly controlled except for its northwest part, while in Montrose and Independence Heights land use has been much less controlled and possibly more market driven due to the lack of private land use control or the loose private covenant restriction implementation. Furthermore, if one examines River Oaks without its northwest portion (which experienced significant commercial and office development over the years), the land use diversity index should be even lower and experience even less change. The following three land use parcel maps show the parcels that experienced changes between 1985 and 2005 (Fig. 7). Apparently, River Oaks has those changed parcels concentrated in the northwest part of the super neighborhood. For Montrose, those changed parcels are everywhere and do not show any clear geographic concentration. The changes for Independence Heights is somewhere in between.



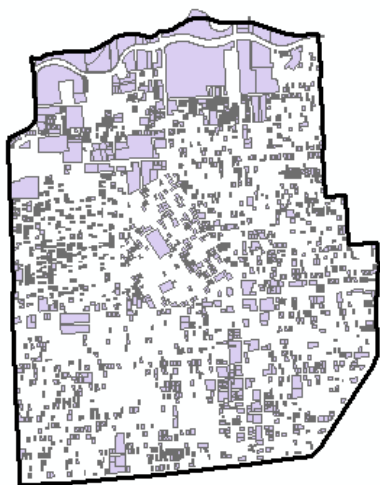
A. Land parcels in River Oaks that have difference uses for 1985 and 2005.

Fig. 7: Land Use Change Pattern between 1985 and 2005 in Three Super Neighborhoods.



B. Land parcels in Independence Heights that have difference uses for 1985 and 2005.

Fig. 7 continued.



C. Land parcels in Montrose that have difference uses for 1985 and 2005.

Fig. 7 continued.

Accessibility

Accessibility is measured by 1) Commercial Distance: median travel distance from the single family residences to the nearest commercial uses; the shorter the distance, the greater the accessibility. 2) Bus Stop Distance: median travel distance from the single family residences to the nearest transit stop; the shorter the distance, the greater the accessibility. 3) Park Distance: median travel distance from the single family residences to the nearest public park; the shorter the distance, the greater the accessibility. This portion of the analysis uses the data as of December 2005 (Table 14).

Table 14: Accessibility.

	River Oaks	Independence Heights	Montrose
Commercial Distance (feet)	926.64	426.05	309.74
Bus Stop Distance (feet)	631.69	783.10	461.80
Park Distance (feet)	1338.13	1772.83	1372.34

The results for commercial distance indicate that Montrose has commercial land uses that are very close to single family residential (309.74 feet). River Oaks' commercial land uses have

been kept away at a median distance of 926.64 feet from single family residential land use. Montrose also shows its advantage in access to public transit with a median distance of 461.80 feet from single family residential unit to bus stop. Despite of its high income and high housing value for which conventional assumption might suggest a lack of public transit service, River Oaks in fact has very good access to public transit. The bus stop distance for Independence Heights shows its disadvantage in access to public transit, while good access to public transit may be expected by the residents who have the poorest socioeconomic status among the three. Not surprisingly, Independence Heights also has poor access to amenities like public parks. It has longer median distance (1772.83 feet) from single family residential units to parks than Montrose (1372.34 feet) and River Oaks (1338.13 feet). River Oaks has excellent access to parks-easy access to good amenities that are one of advantages for affluent neighborhoods.

Table 15: Commuting to Work - Workers 16 Years and Over (Source: Census 2000).

Super Neighborhood Name	Drive Alone	Carpooled	Public Transportation	Motor Cycle	Bike	Walked	Other Means	Work At Home
RIVER OAKS AREA	83.3%	5.9%	2.1%	0.2%	0.0%	2.0%	0.4%	6.1%
MONTROSE	73.4%	7.0%	7.9%	0.2%	1.9%	4.5%	0.5%	4.5%
INDEPENDENCEHEIGHTS	59.8%	22.0%	11.5%	0.7%	0.3%	2.2%	2.1%	1.5%
CITY OF HOUSTON	71.8%	15.9%	5.9%	0.1%	0.5%	2.3%	1.2%	2.3%

While Independence Heights has poorer access to public transit, residents there actually are more public transportation dependent than those in Montrose and River Oaks are (Table 15). This is demonstrated by Independence Heights' higher carpooled and public transportation rates. The recent bike and pedestrian oriented plan initiatives in Montrose has encouraged more residents to bike or walk to work than the other two super neighborhoods.

Pedestrian Access

Pedestrian access is measured by 1) Pedestrian to Commercial: percentage of single family unit parcels within ¼ mile (Duany and Plater-Zyberk, 1992) of all existing commercial uses; the higher the percentage, the greater the pedestrian access. 2) Pedestrian to Transit: percentage of single family unit parcels within ¼ mile of all existing bus stops; the higher the percentage, the greater the pedestrian access. 3) Pedestrian to Park: percentage of single family

unit parcels within ¼ mile of all parks; the higher the percentage, the greater the pedestrian access. This portion of the analysis uses the data as of December 2005 (Table 16).

Table 16: Pedestrian Access.

	River Oaks	Independence Heights	Montrose
Pedestrian Commercial	0.707	0.996	1
Pedestrian Transit	0.936	0.807	1
Pedestrian Park	0.597	0.420	0.580

The results show that Montrose has excellent pedestrian access to commercial, public transit and parks. Although Independence Heights has good access to commercial, its access to public transit and parks indicates its disadvantageous socioeconomic status again.

Table 17: Urban Form Measurement Comparison between Portland and Houston.

Urban Form Measurement	Portland		Houston		
	Forest Glen	Orenco Station	River Oaks	Independence Heights	Montrose
Internal connectivity	0.67	0.81	0.90	0.84	0.96
External connectivity	569	1016	298	178	230
Median block size (feet)	3365	830	1586	1173	819
Number of blocks per SFDU	0.026	0.15	0.12	0.15	0.17
Median distance to nearest commercial (feet)	3184	834	927	426	310
Median distance to nearest park (feet)	1267	873	1338	1773	1372
Median distance to nearest bus stop (feet)	1474	247	632	783	462
Percentage of SFDUs within 1/4 mile of all commercials	0.04	0.78	0.71	1.00	1.00
Percentage of SFDUs within 1/4 mile of all bus stops	0.34	1.00	0.94	0.81	1.00

To this end, the quantitative analysis is only able to examine a model of ‘free market with limited government intervention’ approach, leaving the two extremes of Coasian and Pigovian alternatives not compared. However, it would be interesting to compare the results for Houston with the results for a city with much more government intervention in land use planning. Portland is the other extreme in terms of Coasian and Pigovian alternatives. Using a same set of urban form measurements, Song and Knaap (2004) present the results for their study of two different neighborhoods in Washington County Portland. Forest Glen is a ‘typical’ neighborhood, while Orenco Station is a neighborhood design with new urbanism concept and ‘mixed use’. They conclude that Orenco Station has better internal street connectivity, more mixed land uses, better pedestrian access to commercial uses, parks and bus stops, but lower external connectivity than Forest Glen. When one compares the neighborhoods in Houston with those in Portland, Houston neighborhoods have better internal connectivity, but greater external connectivity. For median

block size, Houston's Montrose has the smallest median block perimeter among all five neighborhoods, which means Montrose has the greatest internal connectivity. River Oaks' median block perimeter (1586 feet) is the largest among Houston's neighborhoods, but it is still much smaller than the 'typical' Portland neighborhood Forest Glen. The numbers of blocks per SFDU further support the argument that Houston neighborhoods have better internal connectivity. Houston neighborhoods have better pedestrian access to commercial uses and public transit. However, the residents in Houston neighborhoods have to walk longer to get to public parks (Table 17). A caution for the scale of this comparison: while Song and Knaap chose two residential neighborhoods, this study chose three super neighborhoods with their areas much larger than the areas of two neighborhoods in Portland. But still, from the comparison, it shows that Houston neighborhood urban form has achieved many of the characters of the neighborhoods planned with 'mixed use' concept like Orenco Station. Such urban form in Houston has been developed without zoning regulation. However, this does not imply any conclusion that Houston is a better place to live than Portland.

A Tale of Three Super Neighborhoods

River Oaks

River Oaks was Houston's first master planned neighborhood. The development of River Oaks started in 1924 when three prominent Houston businessmen Hugh Potter and Hogg Brothers purchased 1000 acre land for a suburban and automobile oriented development. Its original goal was to not only provide homes for the wealthy, but also accommodate some with more modest income. Thus, its initial intention was to build an inclusive neighborhood in terms of the residents' socioeconomic status. However, due to its well planned, restricted and maintained development, it soon became the most expensive neighborhood in Houston and has remained so. Especially after the 2nd World War when Houston experienced its greatest urban growth, many middle classes in River Oaks were priced out for affordable housing elsewhere. Interestingly, during the early stage of River Oaks development, Hugh Porter and Hogg Brothers felt that zoning would stabilize land use patterns in residential subdivisions by stating that public land use intervention in private property would "prevent grocery stores, filling stations and chilli joints from crowding at random among private residences" (River Oaks Property Owners Association, 2008). However, zoning was never approved. So the developers established a homeowners association to employ rigid deed restrictions to achieve their goals in land use.

Designed by famous architects in their eras, many of the original single family residential units in River Oaks were built in the 1920s and 1930s. Right at the beginning of River Oaks development, there were shuttle buses that operated between the River Oaks Country Club and downtown. Good access to public transit seems to start at the incipient stage of River Oaks development. Over the years, some of the homes have undergone renovations, but others have been demolished and rebuilt. Because the River Oaks Property Owners Association has overseen renovations and new home development, the integrity of most part of River Oaks neighborhood has been maintained. The intervention of River Oaks Property Owners Association ensures the uniformity of design and landscape that were envisioned by the original developers of the neighborhood.

Deed restrictions in River Oaks ensure that the neighborhood is almost exclusively single family houses except for its northwest area along I-610 loop. Those deed restrictions not only prohibit multifamily residential units and commercial development, but also maintain the traditional neighborhood architectural and landscape styles. Nevertheless, the intervention of River Oaks Property Owners Association in the design and landscape of the neighborhood through deed restrictions does not exclude a diversity of architectural and building styles. A variety of styles all together contributes to a harmonious sense of the neighborhood. Besides overseeing deed restriction implementation, the River Oaks Property Owners Association took over maintenance of the neighborhoods parks and public greenways in 1998. Furthermore, the River Oaks Property Owners Association has established a Foundation to raise money to fund park and public land improvements. Undoubtedly, River Oaks was and remains the most restricted residential neighborhood in Houston. The River Oaks Property Owners Association was maintained and has served the community through the continued deed restriction enforcement.

River Oaks super neighborhood currently includes two of Houston's most prestigious upper-end income areas-River Oaks and Afton Oaks. According to a recent study conducted by Houston's Planning and Development Department, the northwest part of River Oaks has seen significant development activity for high income rental units and mixed-use development. On its west part, many original houses have been renovated into much larger homes. The neighborhood's garden apartments have also been replaced with luxury single family units and townhouses because of the continued property value increase. In the meantime, major public and institutional investment in the nearby neighborhood will continue to attract development in the area in the future.

Montrose

The development of Montrose can be dated back to the early 20th century before the development of River Oaks. Montrose was one of the first suburbs of Houston, developed as early as the beginning of the 1900s. It was conceived in 1910 when J.W. Link's Houston Land Corporation envisioned a "great residential addition" on land. The neighborhood has a strong identity with its distinctive character of cultural eccentricity and diversity built up over its long history.

Most of the original buildings in Montrose date from 1900 to 1940. Montrose witnessed and benefited from the beginning of a mobility revolution in which the new streetcars extended travel distance without increasing travel time. For instance, the Houston and Fairview Street Railway added a line to Montrose at the beginning of the century. That was possibly the earliest evidence of Montrose's good access to public transit. Starting from the 1960s, when the area's original deed restrictions got expired, the pre-War single family houses began to give way to apartment and commercial uses. According to 2000 US Census, less than 25 percent of the housing units are single detached houses. Multi-family development is common, especially small-to medium-size properties under 50 units each.

Houston's real estate boom in the 1990s significantly drove up the property values in Montrose. This transformed the Montrose from a place with many abandoned buildings and low rents to a neighborhood with new condominium and high income rental development and a prime market for redevelopment. During the same period, large amount of townhouses and high-rise apartments replaced bungalows. Re-modeled and new housing development, high rents, upmarket commercials and office buildings quickly showed up in many areas of the neighborhood. Gentrification in Montrose started in the 1990s with its changing housing market and redevelopment. For instance, the demographics of the renting population has changed since the 1990s, musicians and artists have been replaced by attorneys, medical practitioners, and other professionals who can afford the higher rents. Musicians, artists, gays and lesbians have left Montrose and moved to the nearby neighborhoods such as Meyerland, Westbury, and Second Ward, etc. According to 2000 US Census, roughly 83 percent of the Montrose population is between 18 and 64 years old, whereas in the city, this group makes up only about 60 percent of the total. Montrose therefore has fewer seniors and youths than the city average.

The overall land use pattern in Montrose shows a highly mixture of single family and multifamily residential land uses and a highly mixture of residential and commercial land uses. The predominant land use in Montrose is residential, with single- and multi-family uses mixed together. The major commercial corridors are Montrose Boulevard, Westheimer, West Gray, Shepherd, and Smith/Louisiana. The intersection of Montrose and Westheimer has a high concentration of commercial activity. The Richmond and West Alabama corridors have a mixture of commercial and residential uses, including numerous multifamily units. Multifamily uses are also concentrated along Commonwealth and Hazard. Multifamily homes are mixed with single family houses in the neighborhood. There are also some public and institutional uses throughout Montrose such as the Saint Thomas University and some near the intersection of Montrose and Bissonnet in the Museum District.

The dense street grid, numerous connections to adjacent neighborhoods, convenient local buses, METRO's light rail nearby, high concentrations of entertainment, commercials, all types of residential units (including a good share of apartments and condominiums) in Montrose altogether contribute to high existing and potential pedestrian activity. The 2000 U.S. Census shows that Montrose has young, well-educated, and fairly affluent residents who have propensity to walk or ride public transit. A study by Lockwood, Andrews and Newman Inc. in 2005 shows that sixteen percent of Montrose workers, or one out of six, took the bus, bicycled, walked, or otherwise went to work without driving a car. Almost 5 percent walked and 2 percent rode bicycles. This was double the rate of the city as a whole. A survey conducted in the same study shows that 35.4 percent of the respondents chose 'walk' as a desired means of travel within Montrose, 43.4 percent of the respondents chose 'ride a bike' as a desired means of travel within Montrose (Lockwood, Andrews and Newman Inc., 2005).

The Montrose Super Neighborhood Council, a civic organization, has supported some 20-plus small civic clubs and neighborhood associations within its super neighborhood boundary. The Super Neighborhood Council rallies these neighborhood associations and civic clubs when large community concerns develop. There is an interdependent relationship among them. In 2002, for instance, Mandell Place and Winlow Place, two tiny neighborhoods bounded by Montrose and South Shepherd on the east and west and Westheimer and West Alabama on the north and south, fought diligently to protest the modern, mammoth, multifamily units and trophy homes that threaten the 1930s-era charm of the neighborhoods they invaded. The two civic associations representing these neighborhoods had been the only ones in the area to succeed in a battle with City Council to keep these structures at bay. It was a costly battle and neighborhood resources were limited to resident contributions. A three-story dwelling was being constructed in deed-

restricted Winlow Place. It occupied much of the tiny lot and towers over its neighbors, exceeding height limits in deed restrictions. The city's Legal Department declared the precise deed restrictions regarding third-story dwellings as "vague". Once this development is in place, other developers can use this as a precedent for more overbuilding (Ramon, 2002).

Montrose Super Neighborhood has also been active in competing for major city project which will benefit the larger neighborhood. One example is its attempt to attract Metro's Richmond Avenue route. In 2005, Metro was looking at two potential routes for the proposed light rail line the University Corridor (part of its \$1 billion partnership with the federal government to provide five new transit corridors in the city during the next decade). The two possible routes were Westpark and Richmond Avenue. Montrose Super Neighborhood Council believed that a Richmond Avenue alignment would provide the most benefit to its neighborhood for accessibility and ridership. Those neighborhood associations and civic clubs formed a coalition to ensure that their voices are heard by the Metro. The Super Neighborhood held numerous meetings with the Metro, asking for comprehensive planning and strict execution during the construction phase. The Super Neighborhood also urged the Metro to conduct careful comprehensive plan so that the neighborhood won't lose its businesses and residents as a result of planning and construction. They maintained that the concerns of the businesses and residents should be taken care of by the Metro. Other concerns discussed with the Metro included parking, streetscape standards, and tree transplantation or relocation. Many of these standards are far stricter than the current Houston City Ordinances (Manning, 2005).

Independence Heights

The history of Independence Heights goes back to 1910 when the Wright Land Company secured the land and developed a new community for African-Americans. With their own financing, they provided an opportunity for people with lower- and modest- incomes to become homeowners in Independence Heights. Independence Heights was the first town incorporated in Texas by African-Americans. It was consolidated with Houston in 1929 and is still a predominantly African-American neighborhood.

In history, African-Americans from eastern Texas and south Louisiana moved into sparsely populated neighborhoods like Independence Heights which resembled their rural and small-town communities in their hometowns. The word "heights" could be connected with higher places that got cooler breezes during Houston's long and hot summers. During the early twentieth century, African-American migrants to Houston at first settled down in well-established African-

American neighborhoods like Third, Fourth, and Fifth Wards. Then a few families built houses in newly created African-American neighborhoods like Independence Heights, which are outside Houston inner city. In Independence Heights, independent and vibrant expressions of Black culture and atmosphere of community consciousness cultivated positive relations between established residents and newcomers. They further developed coalitions to advance socioeconomic equality in Independence Heights, one of the sparsely populated and sprawling African-American neighborhoods in Houston. Because of Houston's large size, those African-American neighborhoods were usually formed independently and separately of one another. The development of Independence Heights witnessed Houston's African-American community increase. For example, between 1910 and 1920, Houston's African-American population rose by 42 percent. In the 1920 to 1930 period, it rose further by 87 percent (Pruitt, 2005).

As an historic neighborhood, Independence Heights has many historic buildings and areas worth effective conservation. For instance, in 1989 a Texas Historical Commission marker was placed on the grounds of Greater New Hope Missionary Baptist Church to mark the city site as a Texas Historical Site. In 1997, the National Historical Commission identified a historic residential district and specific historic buildings within Independence Heights, including the famous lobster vendor first introduced in the year 1918. The city of Houston has a Historic Preservation code. In the code, the responsibility for determining whether an old building should be listed for preservation falls to the Houston Archaeological and Historical Commission (HAHC). The board of the commission consists of voluntary professional experts such as archaeologist, historian, architect, planner, and real estate appraiser. Since the adherence to the Houston building conservation code is voluntary and the role of the Board (with its unpaid status) requires persuasion rather than coercion in historic building conservation in old neighborhoods like Independence Heights. If a property owner wants to change a building that has been listed for conservation, s/he can apply for a certificate of applicability. The HAHC then may suggest changes that would be acceptable while would not violate the integrity of the historic building in the old area. However, since there is an emphasis in the Houston code for historic building conservation that the board "be sensitive to the property owner's financial condition" (Houston Code 33-238), those suggestions from the Board need not be followed by the property owner. Thus, there is a continuous pressure in Independence Heights to raze small houses located on large lots and replace them with more profitable buildings. If the smaller house is architecturally and historically significant, a plea of economic need would change the fate of the building. Such tendency can be seen in places adjacent to areas that have experienced a rise in property values. The increase in property values in the Houston Heights (which has also experienced gentrification

in recent years) has put pressure on adjoining Independence Heights. The only defense against such intrusion is neighborhood cooperation and enforcement of private covenants. However, given the socioeconomic status and current validity of deed restrictions in only a few areas in Independence Heights, the defense against the intrusion to historic buildings is weak.

Independence Heights is declining in population. The young generations do not return to settle in the neighborhood, while the older residents are getting up in age. Over 35 percent of the children there live below the poverty level and per capita median income is \$10,447 or about a third of the U. S. per capita income. Almost 60 percent (59.88%) of the population is African American. The next largest population group is Hispanic at 32 percent (32.47%). One hundred percent of the proposed targeted subsection of Independence Heights is in the 100 year flood plain. There are approximately 370 properties in the proposed targeted subsection that are undeveloped have tax liens. Almost 200 of those have long term tax liens. Independence Heights features great access and but has a lot of churches and older homes. Its current land use map shows a large amount of industrial land uses, especially at its southwest part. Those industrial land uses are mixed with other land uses, such as residential uses and commercial uses. There is also a certain amount of undeveloped land in Independence Heights, located in many areas of the super neighborhood. Given the fact that Independence Heights has been losing its population during the past decade, the undeveloped land will remain its current situation. For some properties, the owners are behind on their taxes and the city is fixing to foreclose. The Independence Heights super neighborhood council is trying to generate funds to buy those properties in order to keep out the upscale developers who want to build expensive houses in the neighborhood.

In early 2003 several Houston business leaders became concerned about the future of the city after touring some of Houston's poorest neighborhoods. The poverty they witnessed, in stark contrast to surrounding affluence, led them to a vision of establishing a collaborative initiative called Houston HOPE to work towards substantially reducing poverty. After the inauguration of Mayor Bill White, the City of Houston began to look at subsections of Houston's most blighted neighborhoods with high numbers of long term tax liens. The city identified Independence Heights as one of its six super neighborhoods that could benefit from concentrated infrastructure investments in targeted subsections of the neighborhoods. Independence Heights has high concentrations of tax delinquent and undeveloped property. It is believed that land acquisition and infrastructure improvements by the City of Houston in Independence Heights will be a catalyst for other neighborhood improvements such as the development of affordable housing. Currently,

the Land Assemblage Redevelopment Authority (LARA) has purchased 77 properties in the Independence Heights area.

Summary and Conclusions

In this chapter, socioeconomic cluster analysis is used to select case study super neighborhoods for urban form and land use pattern analysis. Several urban form measures are computed for super neighborhoods River Oaks, Independence Heights, and Montrose. A comparative study for those three super neighborhoods is carried out to examine similarity and diversity of their urban development and land use patterns in the measurements of street design and circulation systems, density, land use mix, accessibility, and pedestrian access. The results show that those measures capture differences in socioeconomic status and meaningful urban form and land use diversity and changes in super neighborhood characters.

However, the research results need to be interpreted with some cautions. First, multifamily units are not included in the urban form and land use measures mainly because of the lack of data on the number of units of each multifamily unit. The bias is fairly limited as multifamily residences are the minority (i.e. low percentage in terms of lot numbers) in all three super neighborhoods, especially River Oaks and Independence Heights. Second, this analysis only conducts chronological analysis for land use diversity changes (using land use diversity index), leaving other chronological analysis such as street design and circulation systems, density, accessibility, and pedestrian access unaddressed. Those four sets of analysis are only conducted in a cross-sectional approach. The main reason for this limitation is the lack of shape files (which are stored in an outdated computer system that is not convertible for GIS spatial analysis) for chronological analysis for the four dimensions. In addition, Houston Planning Department does not update its GIS shape files very often due to the prohibitively high costs of regular updating. For instance, their GIS unit only has the building shape files acquired in 1994. And it has not been updated since then. Third, even for the chronological land use diversity index, the shape files are from the 2005 data, with attribute data for the years from 1985 until 2005. This approach therefore may not accurately reflect historical land use pattern. For instance, a single land parcel lot in 1985 could be subdivided into several lots during any time between 1985 and 2005, but the analysis only uses its situation in 2005. Fourth, spatial coverage data of deed restrictions for super neighborhoods is not available at this point. Houston Planning Department is currently soliciting the information citywide. It will take a while to make the data organized and ready for analysis in the future.

The research offers several findings on urban form and land use. The chronological analysis of land use diversity in the super neighborhoods finds that in general neighborhoods are becoming more diverse in land use in all three super neighborhoods. However, for the super neighborhood with continuous private restrictive covenants in place, land use diversity increases much less than the other two super neighborhoods where deed restrictions get expired and/or the socioeconomic status in neighborhoods make the effective implementation of deed restriction impossible. Deed restriction enforcement usually falls into one of four categories: residential-use-only restrictions; single-family-use-only restrictions; set-back requirements; and parking/storage restrictions. Numerous older neighborhoods in Montrose and Independence Heights have restrictions that may not be in effect because certain portions of the restrictions may have expired and not been renewed, and thus are not effective in preventing commercial and/or industrial property uses in the neighborhoods.

A second finding of this research is from its cross-sectional analysis on street design and circulations systems, density, accessibility, and pedestrian access. Despite that all three super neighborhoods were established during the early twentieth century, historical reasons for their original development, land development over decades, influences from nearby neighborhoods, neighborhood plan initiatives, and their socioeconomic composition in the neighborhoods all significantly contribute to the differences in the four urban form dimensions. Because of the complex nature of land use pattern formation, it is impossible to isolate the impacts of any one factor or to answer the question of which specific factor is connected to the identified urban form and land use pattern changes. A dismal picture in this regard is that affluent super neighborhood like Rive Oaks enjoys excellent public transit access even though a majority of its residents are private vehicle dependent, while disadvantaged Independence Heights has poor public transit access even though a large percentage of its residents cannot afford to drive to work and are public transit dependent. Given the findings from numerous researches that public transit access is an important factor in employment opportunity provision in disadvantaged neighborhood; this result offers policy implications on public transit improvement in Independence Heights. Similarly, the pedestrian access and accessibility to public amenities like parks are not good in Independence Heights. If the City were to revitalize Independence Heights and work against its recent population decline in the neighborhood to attract more people to live there, attentions should go to public amenity betterment. Independence Heights' large percentage of undeveloped land is potentially suitable for park development.

Another finding is that urban form measures are more relevant to the characters of super neighborhoods than to the urban/suburban locations. For street design and circulation systems,

both Montrose ('urban' area as defined by Houston Planning Department) and Independence Heights ('suburban' area as defined by Houston Planning Department) have better internal and external connectivity than River Oaks ('urban'). In a similar vein, lot size, single family unit density and floor space are also less relevant to urban/suburban locations. River Oaks and Montrose are both urban, but have very different results in those measurements. Independence Heights is considered as suburban neighborhood, but has the smallest floor space area. Housing options for River Oaks and Montrose also indicate that housing types are less associated with urban/suburban locations. Same argument applies to distance from single family residences to commercial facilities. In all three super neighborhoods, there is no evidence shows that neighborhoods remain isolated from transit, even for River Oaks where conventional thinking might relate this affluent neighborhood to less public transit or transit exclusion from the neighborhood. However, River Oaks does show its relative homogeneity in land uses where commercial uses remain separated and concentrated on its northwest part. Montrose and Independence Heights do not show such land use pattern.

The fact that this quantitative analysis used block groups as basic analysis unit and then used super neighborhood to define the sets of those block groups raises the issue of a particular scale of analysis. The urban form spatial analysis of three super neighborhoods only represented a few different types of neighborhoods in the city, and therefore, may not be representative of the whole general group. Such approach provides an opportunity to combine quantitative and qualitative analysis for in-depth study of those super neighborhoods. However, a thorough quantitative study for urban form may call for a comprehensive analysis which covers all super neighborhoods in the city. In addition, current scale of super neighborhood also brings up the issue of boundary. The super neighborhood boundary helped to define the set of block groups, but in the same time, it also brought in some block groups that do not have the same cluster nature as others in the same super neighborhood. Both River Oaks and Montrose had this problem. Super neighborhood is an arbitrarily defined administrative boundary that is not ideal as many boundaries scientifically defined in quantitative analysis.

American cities take on high degrees of spatial differentiation and stratification. The socioeconomic factors in this study include race/ethnics, educational attainment, household income, homeownership, housing density, housing value, and rent. This study is unable to fully address the implied causal relationship between land use regulation and urban form because there may be alternative explanations having to do with socioeconomic composition. Besides aforementioned socioeconomic factors, other effects such as age of development, specific development history, and local politics all can be confounders on spatial differentiation and

stratification. This study only selected a few. Thus the variables used in the analysis only yielded a grouping of neighborhoods with different socio-spatial profiles that reflect the selected variables.

The accurate spatial data that can reflect different types of land use controls is not available. While the Houston Planning Department has descriptive statements on the deed restriction status for some of the neighborhoods, it was difficult to figure out the exact deed restriction status for each of the lots in a certain neighborhood. Houston Planning Department is soliciting deed restriction status from the neighborhoods citywide recently and plans to integrate the information into existing spatial information. The research would be enhanced when the deed restriction status survey is completed by the Houston Planning Department.

Zoning is only one tool of implementing land use planning, often not effective even in the U.S.. Zoning has led to undesirable outcomes such as vast tracts of homogeneous land use, that is a function of the way in which zoning has been implemented, not necessarily a characteristic of zoning itself. There are plenty of cities around the world without zoning, and they continue to be viable urban centers. Hence, zoning may not be necessary, let alone sufficient, condition for effective planning. Houston distinguishes itself from other American cities in the existence of zoning. In the meantime, the public and private sectors interactions in the planning process have many similarities with those in other American cities.

While proponents for more government intervention in Houston's land use may raise many concerns about Houston's less property attenuation from the government regulations citywide than other American cities, this analysis raises some positive issues that achieved by Houston's lack of governmental zoning in land use. When planners have focused their attention on neighborhood street network design to realize better connectivity for compact growth and to discourage sprawling development, many Houston neighborhoods have good internal connectivity in place driven by market, neighborhood plan initiatives, and/or local socioeconomic status. In addition, better land use mixing and better accessibility to commercial uses have been achieved in many neighborhoods. The positive side of mixed use is supported by a research which concludes that residents are willing to pay premiums for homes in neighborhoods with more connective street networks, more streets, shorter cul-de-sacs, more and smaller blocks, better pedestrian accessibility to commercial uses, more evenly distributed mixed land uses, and proximity to operating light rail stations (Song and Knaap, 2003). Montrose is an excellent example in this regard, but those in Montrose are achieved without zoning.

CHAPTER VI

CONCLUSIONS

This final chapter consists of three sections. The first section discusses the policy implications of Houston's land plans, regulations, and governance under a land market mechanism with limited government intervention based on the evidence of land use governance practice and resultant urban form. In analyzing the problems revealed in the land development practice in Houston, the study attempts to find out the problems that underlie the current land use governance mechanism and draw out policy implications and recommendations. The second section revisits the debates on plan versus market, making the arguments from the lessons learnt from the Houston case. The third section focuses on the theoretical debate of the two strands of institutional economics theories, the Coasian theorem and public choice theory, which provide the conceptual framework for this study. The discussion analyzes the applicability and difficulties of these two theories in addressing land development and urban form in Houston, and explores how to use institutional economics thoughts in theory for the empirical case. The recommendations for future research are provided at the end of this chapter.

Discussions on Policy Implications

Plans and Regulations

Like every other American city, Houston has laws to address land use, such as building codes, parking regulations, setback rules, fire prevention. Lack of zoning does not mean free for all. Contrary to conventional perception of Houston's lack of plan, there has been a significant amount of planning in Houston. What Houston's land use planning system has in common with statutory public planning is that different general-purpose governments and various government agencies have land use related plans. And those plans provide a coordinating place for infrastructure planning, industrial project development, and regional and economic development policy. Blueprint Houston (2003), a non-government organization, reviewed about 35 plans with the oldest plan dates from 1990 and the most recent dates from 2002. With various formats and contents, those plans are work of a wide range of public agencies, civic groups, and community associations. They include citywide (i.e. City of Houston) or region-wide plans (i.e. Harris County or Greater Houston area) and smaller scale plans concerned with neighborhoods, activity centers, major infrastructures, and urban corridors. For instance, neighborhood plans alone cover

10.5 percent of the city's area containing 14.8 percent of the city's 2000 population. Many of the neighborhood plans focus on neighborhood revitalization.

Some of the government interventions in land use are "parallel" to private land use interventions in term of limited geographic coverage. Houston's "patchwork" regulations result in patchwork land use patterns. Many new ordinances are driven by individual projects, and thus only apply to a specific neighborhood. This leaves other parts of the city not regulated by the same ordinances. For instance, the Old Sixth Ward historic conservation ordinance applies only to that neighborhood. Driven by the protest against planned 23-story high-rise at 1717 Bissonnet, city officials currently work on ordinance that would require traffic impact studies for certain high-density projects. Again, the ordinance will be kept narrowly focused. The city needs to have regulations that are comprehensive and future-oriented.

The analysis of super neighborhoods and their involvements in land use reflects a planning process that does not incorporate sufficient and effective coordination among different agencies. In addition, the action plans of super neighborhoods do not directly address the diversity of citizen visions in those super neighborhoods. The neighborhood plans tend to concentrate on short-term revitalization efforts, but do not emphasize longer-term visionary plan focus. Many super neighborhood action plans are isolated from other super neighborhood plans. In other words, they focus on their own super neighborhoods while do not address the relation with nearby super neighborhoods or even the whole city.

Public land use control requires new development that changes the status quo be subject to hearings and ultimately the approval from the government. The system locks in mediocrity and suppresses innovation. The Houston cases of three super neighborhoods show that there is no evidence that private developers will not meet the need for pedestrian-friendly, accessible, and dense mixed-use developments if freed from the regulations that prohibit them from doing those. On the other hand, however, for those who argue that zoning laws discourage mixed race and mixed income neighborhoods, the evidence from Houston is that for a city without zoning law, it is still difficult to achieve mixed race and mixed income neighborhoods. People have similar socioeconomic status and ethnic background live together, in relative isolation from the communities with other socioeconomic statuses. Those groups in the form of neighborhoods or super neighborhoods usually exclusively focus on their own neighborhood issues, making it difficult for residents to develop broader sense plans, as evident in many neighborhood plans in Houston.

Many government interventions that are not directly related to conventional land use control regulations have impact on Houston's land use and urban form. Some of the examples are

attractive tax service package, low taxes, other public interventions such as government subsidies and public investments. In contrast to Houston's business elites' argument, low tax social service does not lend to high competitions because Houston falls far behind cities such as New York, San Francisco, Los Angeles, according to the research on top ranked cities in the number of multinational headquarters. Houston's low taxes and low public expenditures as strategies to attract investments are questionable. The U.S. cities illustrate that the best performing urban regions maintain the most robust public welfare and social service programs, while also being key global economic performers (Vojnovic, 2007). Houston's needs to catch up in those areas if it wants to compete with high profile cities like New York, San Francisco and Boston.

In a 2008 Houston Area Survey conducted by Rice University, the results show that more than half of the respondents would support zoning. However, the survey should be taken only as general concepts. When zoning ordinance details come to agenda, the reaction might be quite different, especially at such a point when voters see maps showing how the new rules might affect their own properties, like the situation in 1993. Both current mayor and mayoral candidates for 2009 election do not favor conventional zoning in Houston but believe some land use controls are essential to protect neighborhoods.

Public Choice and Land Use Governance

Broader understanding of development controls implies a special polity, thus the important issue is to study the polity of Houston as a whole zone. Houston's case provides an opportunity to examine the rules of participation in land use controls between private government such as homeowners' associations and municipalities, where the city runs like an enterprise and market inequalities are translated into political inequalities in different areas of the city.

When compared with formal government interventions, the involvement of homeowners associations has different roots and relies on different rules of public choice in making collective decisions. Those rules include who may participate, how to participate, and how to integrate individual preferences into a collective choice. Such distinctions make homeowners associations' intervention in land use controls significantly different from formal government interventions as an institution in property rights attenuation. The difference results from the contrast between politics and markets as systems for public choices, where politics relies on the vote and market relies on the money. Therefore, politics and markets rely on different mechanisms and rules to make public choices. For homeowners associations, the covenants, the conditions, the restrictions, and the association bylaws are the governing rules. Those rules put limits on some individual

preferences as an attempt to maintain or increase property values in the community. In many cases, the rules include more details than city land use regulations that govern individual property rights choices. However, as the Houston case reveals, since the homeowners association rules such as deed restrictions are put in place by a developer whose goal is to sell the community, those rules might be better at facilitating property sales and maintenance than at improving community collective welfare and governance. Furthermore, homeowners associations' rules have an "inward" focus, leaving many concerns in adjoining neighbors unaddressed. Therefore, ideal planning goals such as mixed race community and/or mixed income community are still difficult to achieve even in a city without zoning regulations. Houston's mixed-use is more about the physical and functional pattern.

The fact that demographic changes, economic fortunes, lifestyle, and values might influence citizens' preference for more government interventions from time to time as evidenced by several voting for zoning in Houston's history indicates a few issues about homeowners associations' rules. Private controls like deed restrictions confer more stability, through prohibitively high cost for the homeowners associations to adjust to changing conditions, to the rules that regulate land use than to the rules that coordinate other concerns within the community or among with the nearby communities. With the limited intervention in private government such as homeowners' associations from the municipality, private approaches like deed restrictions alone have their own limitations. Homeowners associations leave out the renters who do not have the rights to vote for the bylaws and regulations (e.g. deed restrictions) set by their homeowners associations. If homeowners associations cannot solve violations by themselves, they have to resort to the city attorney to sue to enforce the homeowners association bylaws and regulations. Different neighborhoods may have different deed restrictions, they may vary significantly. This study also found the difficulty in getting access to homeowners association bylaws and regulations by the public. Even City of Houston has to solicit those bylaws on a voluntary basis for their recent initiative in digitalizing those deed restrictions.

In a competitive market without zoning intervention, the burden of deed restriction cost falls on consumers and land owners, which produces distributive consequences by excluding moderate- and low-income families from the jurisdiction. Communities where moderate- and low-income families prevail may be less likely to rely on deed restrictions or they get expired without further renewals. In wealthier communities, exclusion of these groups might be achieved through the implementation of deed restrictions. The political, economic, and demographic composition of communities can be linked to preferences for land use controls. So there is a social class bias in the adoption of private land use controls. Homogeneous communities with

high income and educational attainment are more likely to commit to private land use controls. To certain extent, private land use controls are similar to government interventions like growth restrictions as a response to the market. For instance, research (Feiock, 2004; Lewis and Neiman 2002) finds that counties with more industrial land apply more growth restrictions as a response to encroachment of industrial development on residential areas. The difference is about the affordability of the implementation for private land use controls—moderate- and low-income communities simply cannot afford to implement private land use controls like deed restrictions. The public choice is influenced by land-based elites who have influence on local governments and the final choice the public makes. The zoning referendums in Houston's history are an example. The public choice might eventually produce benefits for some but also impose negative results on others. Stronger interest groups that could significantly challenge Houston's pro-growth coalition of business leaders and limited government intervention are missing. In the meantime, the organized manipulation of the urban economy by land-based elites through public regulation is hard to change. Land use reform (e.g. zoning) calls for strong interest groups and their stronger ties with public sectors and local governments. The success of the pro-growth coalition is based on the relative weakness of competing coalitions that have different priorities (e.g. environmental interest groups). Enhancement of the role of super neighborhoods could alleviate the transferring of the externalities from economic growth to the disadvantaged residents.

For public choice perspective, while voters attempt to maximize individual benefits of public programs and put the burden of the negative results on the others (e.g. marginalized populations confront disproportionate exposure to environment hazards), politicians attempt to maximize votes and make the voting results meet their expectations. Thus, politicians including the anti-zoning interests tend to impose influences on the voting process by political campaigns. Government failure may emerge because of such institutional incentives in zoning referendums. The political equilibrium that results from the choices of public voters, interest groups and politicians are not as optimal as the pro-government intervention supporters expect. Campaigns and lobbies often play an important and sometimes decisive role.

As a result of such institution, while Houston leaders maintain that Houston's disinterest in social programs would be compensated by the support of pro-growth urban policies, such support of pro-growth urban policies, unfortunately, has been selectively targeted on certain areas while ignored others that are with low income or minorities but highly expect to have good social programs (e.g. affordable housing, neighborhood revitalization) and public services (e.g. good access to public transit and public amenities). This partially explains the close association

between neighborhoods' diverse socioeconomic statuses and apparently different land patterns (e.g. functionally mixed use as well as external/internal connectivity, pedestrian access, density, etc.).

While the absence of public land use regulations such as growth management generates high level of urban decentralization in Houston, many upper-scale income communities are still within or near downtown area. This helps in Houston's great potential in downtown development and growth intentions. River Oaks is a case in point. Overall, Houston's inner-city redevelopment has resulted in considerable social upgrading as new upscale condominiums and townhouses replace the oldest neighborhoods. The spatial reorganization of socioeconomic status increases land values in those neighborhoods. The residents in those neighborhoods then tend to resort to land use controls to maintain the land use patterns. The inner city redevelopment decision rests primarily in the hands of local officials who may be primarily concerned with the maximization of their political goals.

In Texas, the limited government philosophy was clearly articulated by the ruling Texas Republican Party at the 2000 State Convention, where the first two party-principles adopted were: "we believe that the least government is the best government; the environment is best served by individuals working in their own best interest" (Mason and Bernstein, 2000, P.16A). Despite of the minimal government philosophy, extensive public subsidies were granted to local businesses in history and currently are helping to define the major nodes and arteries of Houston. Therefore, on the one hand, federal, state, and local government intervention greatly contributes to the major nodes and arteries of the city. On the other hand, the city's disinterest in social service and income maintenance program forms various neighborhoods with different socioeconomic statuses and thus different land use patterns. In fact, Houston presents a contradiction of limited government intervention (e.g. in land uses) and large scale and amount of public investments and subsidies (e.g. in infrastructure and major projects). Market behaviors with limited government interventions show certain coordination and coalition in Houston's urban development. The individualism and disorder associated with purely market driven land development are not evident.

Debate on Planning versus Market Revisited

Houston provides a case where private planning of individuals and firms in the market and public planning by planners in government coexist. The existence of one does not seem to exclude the existence of the other. There is no speculation that land use planning control by

means of private contract and planning control by government legislative intervention are mutually exclusive or immutable. Nor is there any suggestion that statutory planning is necessarily antagonistic to the regime of private property rights. Rather, more attention needs to focus on the often-ignored planning 'character' or 'culture' of a city and its neighborhoods with limited government legislative intervention. The government intervention versus anti-government intervention debate is meaningless as some level of government intervention is inevitable even for a model city of laissez faire and free enterprise like Houston. The arguments should be around how much intervention and how to intervene. Free enterprise economy is so ideal that it does not exist in real world. The problematic dichotomy between market economies and planned economies is misleading. A spectrum of market solutions and planning approaches at the ends is more relevant than the bipolarity view.

The case of Montrose super neighborhood indicates that market approaches provide the agents with a wider range of responses than in regulatory planning environment like zoning laws. In many situations deregulation worked marvels, but usually with institutional supervision. For instance, Houston's city attorney helps enforce deed restrictions. Super neighborhoods often obtain help and guidance from the City. As Gomez-Ibanez and Meyer (1990) maintain that public authorities have an important role to play in a deregulated and privatized industry in maintaining competition in the privatized industry. Thus the institutional challenges of Houston's limited government intervention in planning should not be overlooked. However, planning should not be equated to regulations and controls too much. The understanding of planning as government regulations is incomplete. Planners have roles in both public and private sectors. Many civic, community, private and special organizations in Houston make plans. Planning does not refer to public sector only. And the interchangeable use of planning and public intervention is misleading. Government, civil society, and the market complement each other in urban governance and development. Market approaches to land use issues do not necessarily weaken the need for public intervention. And the approaches may need more public oversight. Equity goals are typically not met in many of such market approaches. As the market not only involves efficiency and price, but also involves welfare and rights, public planning intervention is necessary. (However, government intervention such as zoning does not seem do any better in equity issues).

If Houston needs to reconsider having zoning in future, there are a few issues need to be addressed such as high cost for ushering and implementing zoning, high cost for land use change from its current situation to its zoning defined use, and the fiscal burden of the zoning bureaucracies. All these can significantly divert scarce public resources. In addition, the institutional reform in land use controls such as zoning might trigger higher unemployment or a

sluggish economy, as such reform has significant impact on the land market. The costs of meeting land use regulations can be prohibitive for small businesses who may eventually opt to close down or move out. Higher land value due to the zoning might drive up the housing costs in Houston. From the evidence in Houston's previous zoning attempts, the reform in Houston's development control system may involve drastic political reforms. Such reforms incur huge transaction costs of alternating current land use control institutions and beyond the authority of planning profession. The research helps to undergo close institutional analysis of Houston's specific case. After so many years of lack of zoning, along with the critiques on zoning and the emergence of the reformed land use regulations, is zoning still the best choice for Houston's future?

Houston's case provides a case for property right theory that explains the phenomenon of planning and variety in land use regulation implementation and results. For instance, Pearce (1981: p. 52) emphasizes property rights by stating "instead of a local authority protecting the public from external diseconomies, private agencies and individuals would be given the capacity to protect themselves via the ownership of certain 'rights' to prohibit others from causing them 'harm', such rights being enforceable through legal actions". In reality, there are many factors impact property rights attenuation and its physical form results. The study of three super neighborhoods show that the factors can be neighborhood age, historical reasons for their original development, land development over decades, influences from nearby neighborhoods, neighborhood plan initiatives, and socioeconomic composition, just to name a few. Property rights attenuation does not always lead to negative urban forms-Montrose is a case in point. However, how sustainable Montrose's land use pattern and urban form can be in long term is another story as the super neighborhood has already undergone some gentrification.

Although without zoning regulations, planning practitioners in Houston uphold a more physical outcome-oriented planning in the form of inner city development, low-density development (e.g. large minimum lot sizes, ETJ policy, annexation, etc.), and spatial and functional segregation (e.g. activity centers, mega projects, etc.). All these have little difference from the same outcome-oriented physical planning in the zoned cities. The analysis of Houston's urban form and land use shows that the market for an alternative to zoning and planning cannot overcome the problem of homogeneity. The market might provide physical land use diversity, but it fails to support socioeconomic diversity. Government interventions and/or private-public partnership is needed in the effort to attract public subsidies for projects such as affordable housing in the super neighborhoods like Independence Heights.

Houston's land use has narrow spatial boundaries in plans for both super neighborhoods and ordinary neighborhoods. Planning in Houston need to break those boundaries, extend the process to avoid the homogeneity formed by spatial boundaries, and thus encompass socioeconomic diversities in the city. The limits of private covenant restrictions as a tool relate to the scale of the area within which they are applied. But such limits also apply to small and fragmented jurisdictions in metropolitan areas which fail to address cross-border neighborhood effects and interdependences. Fragmented neighborhood jurisdiction's contribution to reducing market uncertainties is much smaller. Besides fragmented governance, the fragmentation is inherent in polycentric urban forms. In Houston, the centralities usually are poorly connected and car-dependent. Spatial disparities between rich and poor are often clearly geographically delineated. Gentrification through inner city regeneration and the privatization of public spaces can act to further fragment the city. Mass transit does not sufficiently integrate the poorer sectors of the urban population as in Independence Heights. Fragmentation occurs through laissez-faire planning or through interventions with the best of intentions, but with unintended consequences (e.g. inner city regeneration in Montrose has led to gentrification).

This calls for a higher level institution for better governance. The civic organization of super neighborhoods provide Houston's planners an opportunity to act as a role to listen to residents' concerns and help to form consensus among them instead of providing technical support only. However, the super neighborhoods' involvement in land use and urban development in general is currently very limited. For a stronger role of super neighborhoods in Houston's land use, planners need to bring different interests in super neighborhoods together to get people to agree and ensure that no group's interest will dominate. In addition, super neighborhoods may take a broader view than homeowners associations in land use issues. It could be an intermediate level of civic organizations for land use controls between homeowners associations and the City. The super neighborhoods have an important potential role to play in this regard. Such role, however, needs to be nurtured and supported by the city. For super neighborhoods like Independence Heights, where the issues of displacement, high percentage of industrial land uses, and unwanted facilities are prevail, super neighborhoods have more responsibilities in dealing with systemic bias, inequality, and symbolic benefits for weak constituencies, as those are the roots of problematic land uses in the super neighborhoods. Supports and helps from planners are particularly important for those super neighborhoods as neighborhoods with more middle-class professionals are more likely to reach solutions than others (Fainstein and Hirst, 1996; Bright, 2000). Besides supports in planning process, other

supportive resources such as money, access to expertise, and media support are apparently significant in bolstering the traditionally excluded.

Institutional Economics Theorem as Research Framework

The theoretical analysis of Pigouvian and Coasian theorem in Houston's case reveals the complexity when one applies them to an empirical case because of time, geography, political and economic environment and even lifestyles. For both Pigouvian and Coasian approaches to land use controls, it has never been easy to decide what, when, where and how to control as optimal as possible. Coasian and public choice analysis of land use control retain the Pigouvian proposition that government is generally in the best position to organize and deliver collective goods which it does by statute and political representation. Public choice theory goes beyond Pigouvian analysis in addressing the question of the citizen's demands for alternative policies, laws, and constitutions.

Coase has two principal propositions relating to the externality debate. One is that government intervention need not be the only way of securing collective action: the scope for voluntary (market) agreements should be explored. The other is that government can facilitate efficient bargaining solutions by establishing a clear system of property rights. For Houston's case, the issue might be for the government to focus more on facilitating a clearer system of property rights, especially for those land lots in lower-income and minority neighborhoods. Even for cities that have zoning, the zoning laws are not efficient as a method of allocating property rights.

The neighborhoods in Houston can be viewed as an economic actor, competing with others in seeking to optimize their objectives in land use and urban development. Each neighborhood will have a preference for particular land use policy mechanisms as have been seen in the zoning referendums in Houston's history and the land use practice in different neighborhoods. Their preferences are influenced by the actor's socioeconomic status, objectives, the nature of 'market failure' it experiences, and the benefits and costs from political debates and outcomes.

Coasian analysis predicts that, in the absence of legal constraints and other transaction costs, communities will find their own solutions to land use problems if they are allowed to negotiate and compensate over. In Houston, however, when land use issues come up between neighborhoods, those issues are usually released to the media and get attention from the government. In many cases, the power of media is greater than that of civic groups. In many

cases, municipalities give response to them, though not always protecting the marginalized neighborhoods, or not always through new land use regulations. Private negotiations may not be effective if without deed restrictions. Negotiations without either legal or private constraints in place are hard to reach solutions among affected parties.

Super neighborhoods, homeowners associations, and inward looking neighborhood plans bring up an issue of the optimal size of planning jurisdiction in Houston and whether participants like developers and residents have an incentive to follow the optimal rules. Coase does not seem to appreciate the importance of boundary delineation in land use regulations. However, land rights have an attribute of excluding others in the use of land. Such exclusive rights are inseparable from the concept of boundary delineation. The boundary delineation however is defined more by socioeconomic status than geographic boundaries, physical patterns or administrative districts. For Montrose and Independence Heights, despite their similar land use diversity index changes, they are very different super neighborhoods in terms of neighborhood historic evolution, demographic composition, and socioeconomic status. Private land use controls are in the hands of current residents and these residents act so as to maximize benefits to themselves, especially in an era when a growing neighborhood preference is for individual responsibility and self support in Houston.

The study of Montrose super neighborhood illustrates that the land use mixture creates many benefits like employment opportunity, pedestrian accessibility, denser housing development, etc. For years, this intermingling has been appreciated by Houston's planners and some residents who choose to live in Montrose simply because of the lifestyle there. The negative costs brought by externality are probably exceeded by the benefits gained in Montrose. The Montrose case also indicates that elevating zoning to a status that it hardly deserves is misleading. However, the case of Independence Heights provides an opposite case where the costs of externality because of the admixture land uses probably exceed the benefits gained in the super neighborhood. The admixture of land use is not necessarily a negative thing, the issue is where and how. There is no general conclusion to be drawn about the pros and cons of land use mixture. Each situation has to be examined on its merits even for different neighborhoods within the same city. This occurs with Coase in maintaining that the benefits and costs of land use controls can only be demonstrated for individual situations. The cases of Montrose and Independence Heights show that at least in some cases private land use controls follow the market through the efforts of property owners to enhance the value of their holdings by pressing for their favored land uses. This is, however, not unique to cities without zoning laws as there are also arguments about zoning's following/responding to the market.

While some activities create costs, they might also generate a lot of benefits in a neighborhood. The government intervention may tackle the costs at the expense of the benefits. In the case of Houston, there may be environmental concerns for minority and lower income neighborhoods like Independence Heights, but at the same time, the residents have the advantage of proximity to their workplaces in the same neighborhoods. This is particularly relevant given the fact that Independence Heights is poor in public transit access and low in private vehicle ownership whereas the residents may walk to their workplaces or run their own small businesses made possible by the mixed land uses. This benefit might be difficult to achieve if zoning laws are in place in such neighborhoods like Independence Heights. For a super neighborhood where unemployment and poverty are serious, the introduction of some industrial land uses with more job opportunities in a residential neighborhood for local residents would be a social benefit for the residents. Furthermore, for the residents in Independence Heights, the costs from environmental concerns could likely be offset by a comparatively affordable housing price or lower rent. For Houston, the negative effects of commercial and/or industrial mixed use with residential land are probably overstated. Some environmental concerns in Houston have been overly attribute to its lack of zoning. For instance, Lai's (1997) study on Hong Kong's environmental regulations and environmental complaints reveals that the relationship between number of environmental complaints and number of planning permissions granted is not considered significant. It falsifies the general hypothesis that planning areas with more approved planning schemes have less environmental complaints.

From public choice perspective, instead of their counterparts' stronger administrative powers in conventional zoned cities, the services of bureaucratic elites and planners in Houston are more competed and challenged by the private sectors many of whom are potential powerful voters and decision making influencers. The private land use control system shows its weakness in terms of consistency, vulnerability to neighborhood socioeconomic status, and subservience to special interests under the market pressure. Private land use controls are geographically (and time, in some cases) limited. Therefore, their strengths are also limited. The Coasian arguments that the market can internalize uncompensated effects such as externalities are not able to fully address the land use issues in neighborhoods where private covenants are not available. For neighborhoods with better socioeconomic status, land market forces are not strong enough to change land use patterns. This observation is similar to cities with zoning laws where land market forces are strong enough for local officials to adjust regulation to accommodate the forces but it is unlikely to happen to upper scale income neighborhoods.

While one argues that the long run locational equilibrium in a zoned community will consist of a configuration of land uses which is not very different from that which would have occurred had zoning never been introduced, such argument is nearly impossible to be tested for real cases and hence is irrelevant. From both institutional economics theory and evidence from this study, any analysis with such conceptual approach is problematic because of the geographical, time, political specifics with different cities. Even in the same city, land use patterns in different neighborhoods have evolved due to their various specifics.

The coexistence of 'planning' and 'market' challenges some of Coasian theoretical viewpoints. For instance, Coasian propose the comparison of the opportunity cost of alternative decisions made freely by individuals and firms versus decisions made by planners. In reality, there is few cases where both of them make land use decisions on the same lot of land, whereas geographical, spatial dimensions, political and socioeconomic specifics of different land lots in the city (or even in the same neighborhoods) make the comparison less convincible. Similarly, Coase argues that 'a better approach would seem to be to start our analysis with a situation approximating that which actually exists, to examine the effects of a proposed policy change, and to attempt to decide whether the new situation would be, in total, better or worse than the original one' (Coase, 1960: 43). Real world however makes such comparative test almost impossible. Even if Houston adopts zoning in future, the city would have to keep many existing land uses as it did in its former zoning proposals. In adopting a zoning law, it is usually the case that the state-imposed uses follow the pre-existing ones, adopting the existing boundaries. Warner's (1962) of the suburbanization of Boston in the late 19th century reveals that several suburban land use, often attribute to zoning, actually emerged without zoning at all.

Public choice theory assumes rational individuals acting in their own interests to account for the acceptance of private land use control system. Such system is the rule agreed upon by the stakeholder players-politicians seeking reelection, administrators expecting promotion, developers, property owners and users looking to protect property values and maximize their individual rewards. Those interest groups (e.g. developers, households, individuals, political units, and public agencies, etc.) in Houston's land use are involved in both the economic and political markets. In the economic market, the interest groups attempt to maximize their land value and profits from land. In the political market, those interest groups have more incentives for competition through voting, legislative support, and other resources. Collective decisions and mutual adjustments are made through interactions among those interest groups. Houston's zoning referendums are more an example of the political market than an example of the economic market.

Research Agenda

One of the future research attentions is on the presumptions of local regulatory systems, the existence of alternative rules, and the practices of variety of urban governance forms with respect to the debate of planning versus market and more government intervention versus limited government involvement in land use policies and development controls. The diversity of land use plan and development control practices in different countries has been, in one way, supported by the theories from an institutional economics perspective derived from transaction costs theory in economics. China's urban land development controls take one of the forms of market supported bilateral governance. Houston takes the other form of market supported bilateral governance. A possible future research is geared toward a comparative approach to land use controls as Houston and Chinese cities (e.g. Nanjing-- Nanjing's urban built area increased from 121 KM² in 1986 to 447 KM² in 2004, which is among the largest urban expansion among Chinese cities.) fall within two of the three categories of land use controls from an institutional economics perspective. Part of this future research will build on the research on Houston's urban form without zoning and its land use control alternatives such as deed restrictions. Despite the tremendous difference between two cities in different countries with completely different political regimes, the comparative study will have its merit in that it compares two forms of land use policies under the market supported bilateral governance. Its implications in urban planning governance theories and land development control policies may go beyond the conventional comparative research on cities within a specific country. Once this research is completed, it has the potential to be expanded to include the more conventional land development control approach such as zoning.

Land use policy and physical environment is just one aspect; others need to be included in future research, such as the study of Houston's social sustainability (equity, social justice, poverty and social exclusion) and the study of Houston's economic sustainability (income inequalities, employment, education and training, local business, services and facilities), both in relation to the city's land use practice with limited government intervention. For instance, another potential research project on regulatory environment and land use is to explore whether private contractual zoning (i.e. Houston's private covenants and deed restrictions) leads to more diverse housing types and whether private contractual zoning leads to greater socioeconomic diversity through its more mixed land use pattern. The study examines Houston city itself and compares Houston with a zoned city (e.g. Dallas) in America to explore if private contractual zoning is the cause of housing and socioeconomic diversity. Again, the research compares two of the three

development control approaches- statutory zoning (third-party governance) and private contractual zoning (market supported bilateral governance).

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