

Uncommon Ground: Property, Coordination, and Rebuilding New Orleans

by

Paul Stewart

Bachelor of Architecture, 1997

Master of Architecture, 2004

Tulane University

Submitted to the Department of Urban Studies and Planning in Partial Fulfillment of the
Requirements for the Degree of Master of Science in Real Estate Development

at the

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Abstract

Following Hurricane Katrina, difficult decisions must be made by both government and investors with respect to reconstitution of New Orleans' housing stock and neighborhoods. For investors, risk and uncertainty abound. For planners, a careful balance between property rights and comprehensive planning is required. The fate of several neighborhoods hangs in the balance. What will it take to recapture the value these neighborhoods once held? Specifically, will the market arrive at a solution or is government intervention called for, and if so at what level? Likewise, what role is warranted for the third sector - nonprofit and community organizations? The thesis argues that private developers and government agencies may be poorly equipped to the task, and formal or informal sub-municipal level organizations may be better positioned to engender successful rebuilding by accommodating and reconciling the interests of individual property owners.

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1 Introduction

There is no market solution to New Orleans. It essentially is a problem of coordinating expectations. If we all expect each other to come back, we will. If we don't, we won't. But achieving this coordination in the circumstances of New Orleans seems impossible.

THOMAS SCHELLING (Gosselin, 2005)

Repairing New Orleans' devastated neighborhoods is a major challenge that will require extraordinary investments of time and money. Above, Schelling rightly points out that coordination among disparate residents and property owners may be the most difficult task of all. However, this thesis diverges from his pessimistic stance, and also rejects the prevailing notion that the only solution might lie in a leviathanic government or a profiteering developer. Instead, the solution can be found in an open, democratic process which recognizes and takes full advantage of the inherent power of existing property owners' shared interests.

This research is relevant for two reasons in particular. In tracing out the elements of an effective, distributed decision-making process for New Orleans' neighborhood rebuilding, it provides timely analysis and academic background for current policy and investment issues. It draws together theory and practice from disciplines including economics, law, and planning. Furthermore, it binds recent academic literature to a specific problem, providing a practical lens for considering proposed innovations in law and contractual arrangements.

1.1 The Hurricanes

...DEVASTATING DAMAGE EXPECTED...

HURRICANE KATRINA...A MOST POWERFUL HURRICANE WITH UNPRECEDENTED STRENGTH...

MOST OF THE AREA WILL BE UNINHABITABLE FOR WEEKS... PERHAPS LONGER. AT LEAST ONE HALF OF WELL CONSTRUCTED HOMES WILL HAVE ROOF AND WALL FAILURE. ALL GABLED ROOFS WILL FAIL...LEAVING THOSE HOMES SEVERELY DAMAGED OR DESTROYED.

POWER OUTAGES WILL LAST FOR WEEKS. WATER SHORTAGES WILL MAKE HUMAN SUFFERING INCREDIBLE BY MODERN STANDARDS.

NATIONAL WEATHER CENTER, NEW ORLEANS LA Aug. 28, 2005; 10:11 a.m. CDT

Twenty three hours after this message was issued, the eye of the storm passed a point some 20 miles to the east of Downtown New Orleans (Knabb, Rhome, Brown; 2005). Perhaps no statement could have prepared people for the unprecedented losses which resulted. The storm and resulting flooding took over fifteen hundred lives across Louisiana (Louisiana Dept. of Health, 2006). Eighty percent of New Orleans flooded at depths reported up to 20 feet, with floodwaters remaining in some areas for several weeks (Knabb et al. 2005). Seventy one percent of New Orleans homes sustained damage. The city's economic losses are still being tallied, but have been estimated at over \$25B from flooding alone (King, 2005). Even excluding the other 90,000 square miles of declared disaster areas across the gulf south (US Dept. of Homeland Security, 2006), the human and economic losses in New Orleans alone qualify Katrina as among the most destructive natural disasters in American history.

Less than four weeks later, with standing water remaining in areas, the city had not yet formally allowed residents to return, when a new evacuation order was issued. Hurricane Rita past well to the west of New Orleans, but the accompanying storm surge breached the tenuous levee system and brought as much as eight feet of water back into the city.

1.2 The Aftermath

Like the hurricane damage, the recovery challenge is enormous, and what took days to destroy will take years to recover from. Of the city's 188,251 housing units occupied before the storm, 134,344 sustained damage (US Dept. of Housing and Urban Development, 2006). Accounting for vacant units, the total damage number rises above 150,000.* Nine months after the storm, 33,788 building permits had been issued (City of New Orleans, 2006a), though city officials indicate that many fewer construction projects have actually begun (Meitrodt, 2006). Out of an estimated 50 million cubic yards of debris, a mere 8.2 million had been removed in the first nine months after Katrina struck (City of New Orleans, 2006b).

There is some consensus that certain neighborhoods should and will be repaired or rebuilt. Indeed, the effects of the hurricane were far from uniform; parts of the city sustained limited damage and have essentially fully recovered. The focus here is on borderline areas - whose repopulation is uncertain.

None of the flood control measures proposed or in progress will reduce the protected area of New Orleans or diminish the overall degree of protection afforded (Koerner, 2006). FEMA flood maps and guidance are anticipated to have limited practical effect on both repair and new construction. Thus we assume at the macro scale that the city will receive equal or better flood protection, and that all areas remain technically buildable. Flood and homeowner's insurance will remain available, though likely at increased cost in some areas.

Given the dramatic decrease in population, and the slow anticipated repopulations (McCarthy, Peterson, Pollard, & Sastry, 2005), every neighborhood may not need to be rebuilt in the next five years. Decisions about where and where not to rebuild will likely be made with input from neighborhood, city, state, and federal stakeholders. Weighing the advantages and disadvantages of various neighborhoods relative to each other will be an important step, but is largely

* Assuming proportional damage to vacant and occupied structures. Vacancy rate and total number of dwelling units from U.S. Census (2004).

beyond the present scope. Instead, this study focuses mainly on crafting an effective framework to support repopulation of neighborhoods generically. The city-wide comparative assessment is left for another effort.

1.3 The Issues

Early on in the public discourse on rebuilding, an idea was put forth that homeowners in any given neighborhood should be allowed to redevelop only if a certain percentage of owners there made a commitment to rebuilding (Bring New Orleans Back Commission, 2006). This notion was roundly dismissed by many as an unwarranted intrusion upon property rights. However, the suggestion was rooted in a real city planning concern, and also highlighted the significant coordination challenge that homeowners and investors face - one that may rightly be the subject of government intervention. Indeed, rather than being an unscrupulous way to subvert property rights, such a requirement might represent a nuanced and appropriate way to guide the city's redevelopment. However, the commission largely ignored the process by which such commitments might be made.

In January 2006, the mayor-appointed Bring New Orleans Back (BNOB) commission made its final planning recommendations, borrowing heavily from the Urban Land Institute's 2005 advisory report. The commission noted that "Neighborhoods require sufficient population to support the equitable and efficient provision of public facilities and services", and recommended "consolidation of neighborhoods with insufficient population to support equitable and efficient service delivery" (*ibid.*, slide 37). Further, it suggested that the city "conduct a neighborhood planning process to determine the future of areas containing deeply flooded and heavily damaged properties" (*ibid.*, slide 41) and not issue any permits to build or rebuild in heavily flooded and damaged areas until neighborhood planning teams have completed their plans" (*ibid.*, slide 46).

While the written report was not explicit about closing neighborhoods, the commission's chairman Joe Canizaro was more so in an interview following its release: "At least 50 percent of those people are going to have to be committed to coming back before we have a neighborhood to design" and that some neighborhoods could die (Michels, 2006). The backlash was strong, with residents declaring "over my dead body", and former New Orleans mayor Mark Morial characterizing the proposal as a "massive red-lining plan wrapped around a giant land grab" (Rivlin, 2006).

Two fundamental assumptions likely drove the proposal that neighborhoods obtain a critical mass before being allowed to rebuild. First, that a minimum population threshold is necessary for the city to efficiently provide municipal services, and to support neighborhood livability and investors' required returns. Second, that market forces would not engender this outcome without regulatory intervention. The thesis reviews these two issues in more detail, while it focuses primarily on considering the most appropriate rebuilding framework and process.

The BNOB proposal is both intriguing and disconcerting because it leaves open the question of how neighborhoods reach their 50% threshold. There are at present two common methods for effecting master-planned, coordinated development: private developer land assembly, and government intervention. In the first case, where fragmented ownership exists, an investor may buy several adjacent properties in order to coordinate investment within that set of properties. In the second case, public authorities might achieve similar ends through regulatory schemes or condemnation and property transfer. What these solutions have in common is an opaque, centralized decision making process. By centralizing this authority, the process is streamlined but risks becoming less democratic or representative. It also leaves open the possibilities of patronage deals and disenfranchisement, neither of which are strangers to New Orleans. Nevertheless, as the currently available methods, both receive due consideration here.

This paper finds that both processes have inherent drawbacks. Not only are their efficiency gains sub-optimal, but they also fail to adequately account for resident participation and

neighborhoods' inherent value. In their stead, alternative means to engender coordination are presented, which do not rely on a command-and-control authority. The analysis shows that there is a hurdle, like the BNOB proposed 50%, below which rebuilding is not profitable and owners will not voluntarily rebuild. However, by facilitating information-sharing and mutual commitment at a local level, neighborhood organizations can help owners overcome coordination problems, strengthen the community, and create a lower risk framework through which redevelopment organically and efficiently occurs.

Depending on the circumstance, any number of solutions may be most effective at increasing property values in a neighborhood. But each will involve trade-offs between economic efficiency and other important criteria by which its success is weighed. Chief among these is equity,* a fundamental principle of democracy and common law. This text uses the term in a broad sense, to include respect for individual and property rights as well as distributive matters. Efficiency is likewise used in the generic sense of economic efficiency from a societal perspective, and clarified where important. A third major criterion for considering the viability of any solution is the degree to which it provides a transparent and inclusive process. Many of the current schools of thought in urban planning recognize past failures as stemming from an overly rationalist, technocratic mind-set, and suggest that a collaborative process which engages diverse stakeholders will lead to a richer, more vibrant outcome (Mandelker & Payne, 2001).

The paper is organized in five remaining parts: Part Two introduces the rationale for coordinated development and develops the rebuilding problem through abstract models. Part Three discusses land assembly, market forces, and competitive supply and demand. Part Four reviews

* Ellickson, (1973) and Fennell (2004) adopt the same criteria in their explorations of zoning and eminent domain respectively. Both note their widespread use and acceptance. Referencing Heller & Krier (1999), Fennell suggests substitute terms including "utility," or "deterrence," for efficiency, and "justice," "fairness," or "distribution" for equity. See also Urban Land Institute (2005), discussing the importance of financial viability, equity, transparency, and inclusiveness in New Orleans redevelopment process.

the basis for government intervention, including eminent domain and land use regulation. Part Five considers alternatives which encourage an efficient market response to the rebuilding challenge. Part Six offers a summary of findings and recommendations for further study.

2 The Problem

Two neighbors may agree to drain a meadow, which they possess in common; because 'tis easy for them to know each others mind, and each may perceive that the immediate consequence of failing in his part is the abandoning of the whole project. But 'tis difficult, and indeed impossible, that a thousand persons shou'd agree in any such action...

DAVID HUME, A TREATISE ON HUMAN NATURE (1739)

In the introduction, two considerations were presumed to underlie the Bring New Orleans Back Commission's recommendation that rebuilding only be allowed if a certain percentage of owners committed to rebuilding: that a minimum concentration of population is necessary for efficient redevelopment and operation of any given neighborhood; and that this concentration might not occur in some neighborhoods without government intervention. The following sections make a case for the first assumption and present arguments in support of the second.

Section 2.1 discusses agglomeration and the link between neighborhood composition and property values. Section 2.2 considers the challenge that a neighborhood in isolation might face in returning to its previous state. Section 2.3 explores the interactions between neighborhoods competing for residents and between different uses competing for a site. Section 2.4 summarizes.

2.1 Agglomeration

There are a few underlying forces which lead to clustered development: efficiency of providing municipal services, maintaining neighborhood livability and security, and financial risk reduction. The most fundamental reason for centralized provision of municipal services is economies of scale – a handful of people with specialized equipment can collect a neighborhood’s refuse and deposit it at a landfill much more efficiently than if each household had to dispose of its own. Providing expected levels of service to under-populated neighborhoods could prove very expensive, and the prospect of half-empty schools and other under-utilized city resources was clearly at the forefront of the commission’s thinking: “Neighborhoods require sufficient population to support the equitable and efficient provision of public facilities and services” (BNOB, slide 35).

Financial risk and investor returns were not explicitly mentioned by the commission as a matter of concern, but that too is of critical importance to neighborhoods’ sustained success.* While perhaps intuitively correct, this connection between investor returns and concentrated development needs close scrutiny, as it lies at the crux of the rebuilding problem.

Throughout history, people have tended to live grouped together – whether for the practical benefits of spreading costs and sharing resources, or for intangible reasons. Similarly, a persistent trait of urban geography is that buildings of similar density, scale, and value tend to be grouped together, often with larger and higher value buildings clustered closer to the city’s center. Transportation costs appear to factor large in the higher rents at the city center, though a part of properties’ value seems to be derived from agglomeration and the positive externalities which result from being proximate to other desirable properties (Fischel, 1985).†

* For simplicity, the text generally does not differentiate here between occupant- and investor-owned property. Likewise, measures of neighborhood livability are assumed to be reflected in home prices, and are not considered separately.

† Note that agglomeration is used throughout the text to refer to loosely clustered development. This is a broader term than contiguity (which strictly involves direct physical adjacency), and more precise than coordination (which

This self-reinforcing link between location and value is somewhat unique to real property, and lies close to the root of this study's problem: given that much of a property's value depends on its physical surroundings, investors are faced with the disconcerting fact that those surroundings and the surroundings' future are often largely out of their control. Without that control or justifiable expectations about the area's future, an investor may be reluctant to devote resources to a given property.

Modern zoning and other regulatory controls work to enforce coordinated use and density of urban developments, and support the agglomeration and clustering of similarly-valued properties that is readily observant in most cities. While there is evidence that cities may evolve according to this pattern without those controls, such as in Houston, it is certainly not always the case. The evidence also suggests that the lack of these controls can have a reducing effect on property values (Seigan 1972; Pollakowski & Wachter 1990). The following discussion explores how, in this case, market forces alone may be inadequate to support agglomeration and to spur efficient development.

2.2 Assurance Game

One might think that if two neighbors could mutually benefit from investing in their properties, they would inevitably do so. The Prisoner's Dilemma is a classical example of coordination problems that may not find efficient resolution, and one which will give context to the problem at hand. The dilemma's defining characteristic is that two parties, A and B, when given a choice between action C (cooperate) and action D (defect), both would unconditionally prefer to take action D and have the other party take action C. However, the catch is that in aggregate, they would be better off if they both make their un-preferred choice - C.

does not necessarily have a spatial component). In later discussion, this distinction has important implications for properties' substitutability and monopolist power. In spatial economics terminology, externalities refer to positive or negative effects that one property can have on another (DiPasquale & Wheaton, 1996).

	B coop	B defect
A coop	3 / 3	4 / 1
A defect	1 / 4	2 / 2

Figure 2.2.1 Prisoner's Dilemma

	B build	B abandon
A build	5 / 5	0 / -1
A abandon	-1 / 0	0 / 0

Figure 2.2.2 Assurance Game

Oil pricing is a simple illustration of the point (Dixit & Nalebuff, 1991). Country A and Country B independently choose oil production levels. Market prices are determined by total output. Holding B's output constant, A will increase profits by increasing output, and vice versa. Thus each has an incentive to produce more. However, if they agree to both produce less, demand will allow higher prices and profits, making them better off individually and collectively than if both produce more. This incentive to cooperate has kept OPEC countries jointly fixing production levels for 40 years.*

Figure 2.2.1 gives an example with A's profits in the lower left of each square and B's in the upper right. If the parties cooperate (low output), they split the total profits of 6. If they both defect (high output), they share the total profits of 4 equally. If one outputs low and the other high, they receive 1 and 4 respectively, or 5 total. Of course the optimal solution is to cooperate. But holding the other party's choice constant, one always gets a better payoff from defecting. Thus independent of the other party's choice, a "rational" actor always chooses to defect.

In the oil pricing scenario cooperation yields the socially optimal outcome, but absent an enforcement mechanism both parties will defect and the sub-optimal outcome will result. Urban redevelopment cases may follow this pattern, or they may more closely resemble an "assurance game" (Dixit & Skeath, 2004).† In such cases the parties' choices are interdependent, so that A's choice affects B's choice as well as B's outcome. Assume two adjacent property owners may

* Of course OPEC's higher profits come at a cost to the larger population of oil consumers. This text endeavors to highlight where efficiency gains or losses occur at a different scale than the population making the relevant decisions.

† Also referred to as the Stag Hunt, following from a story in Rousseau's Discourse on Inequality (Skyrms, 2001).

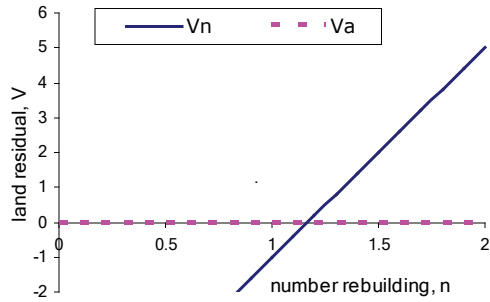
choose to rebuild or abandon their blighted property. Where A chooses to rebuild, A's net value from rebuilding increases if B's property is rebuilt, or decreases if B's remains blighted - the difference stemming from externalities as introduced above. Figure 2.2.2 shows the payoffs, which may be considered as land residuals.

The socially optimal outcome is for both to rebuild, with a payout of (5,5). However, only if B rebuilds, will A prefer to do so as well. If B does not, A will prefer not to, retaining zero net costs. Otherwise, A incurs a net loss while B avoids a loss by abandoning. Unlike the previous case, the parties do not have dominant strategies and the results are indeterminate. Pure strategy equilibria (consistently choosing one course of action) might result if there were an established convention, depending on the parties' risk preferences, or with adequate communication. Note that while the expected value of building is greater than that of not doing so, building provides a wider spread of outcomes and thus carries more risk.*

Intuitively, the assurance game and its payouts fit better than the prisoner's dilemma when applied to an urban redevelopment case. Because of the benefits of agglomeration, and the feedback resulting from externalities, one would expect a strategy that aligns with the neighborhood trend of high- or low-investment to have better payouts than one which doggedly follows a pre-determined course of action.

Continuing the earlier example of two property owners who must decide whether to rebuild, Figure 2.2.3 describes one way the dynamic between the costs and benefits of rebuilding might be considered, and how the results depend on the number who decide to repair. Where property values in a given neighborhood are partly dependant upon one another, individual owners enjoy some benefits of their "good" neighbors' investments (and realizing a positive externality), and suffer the cost of the "bad" ones' non-investment (negative externality). Where

* Using volatility as a standard measure of risk. Assuming the other party's possible actions have equal probability, EV for building is $(5-(-1))/2=3$, and for not building $(2-0)/2=1$. The spread is the absolute value of the difference in outcomes - six and two respectively.



$V(n) = P(n) - C$
 $V(a) = 0$
 n = rebuilt property
 a = abandoned property
 $V(n)$ = property land residual
 $V(a)$ = abandonment value
 $P(n)$ = property market value
 C = construction & repair costs

Figure 2.2.3 Basic Neighborhood Model

P is the market value of a house, it will be an increasing function of the number of rebuilt houses in the neighborhood, n . Where a fixed cost is distributed among property owners and reflected in property values, it would likewise be an increasing function of n . Given C as the cost of repair, the residual land value $V(n)$ is given by the difference $P(n) - C$. Where a represents abandoned property, abandonment value is shown as $V(a)$.

Using this model, it is a simple matter to fix the variables in order to match the payouts used earlier in the assurance game: (5,5); (0,-1); (0,0), and the results graphed in Fig. 2.2.3 correspond to those payouts. The horizontal axis represents to the number of parties choosing to rebuild (n), and the vertical axis represents the payouts. The solid line $V(n)$ shows the value for one who rebuilds, and the dashed line $V(a)$ shows the value for one who does not. Thus where $n = 2$, the solid line shows the payout for each; $V(n) = 5$. Where $n = 1$, payout to the rebuilder is $V(n) = -1$, while the dashed line shows the payout for the party who abandons: $V(a) = 0$. Where neither party rebuilds, $V(a) = 0$. For the two-party game, this representation does not add much value over the normal form depiction in Figure 2.2.2. But where N becomes large, the graph yields more interesting results. The graph makes clear that the critical point is where the two lines cross – in this case where $n \approx 1.1$ (such that 55% of the owners decide to rebuild). This might be considered the tipping point – the point above which rebuilding provides a positive NPV. If less than that percentage rebuild, any owner would be better off not rebuilding.

Figure 2.2.4 modifies and expands on the scenario. The graph shows a variable marginal

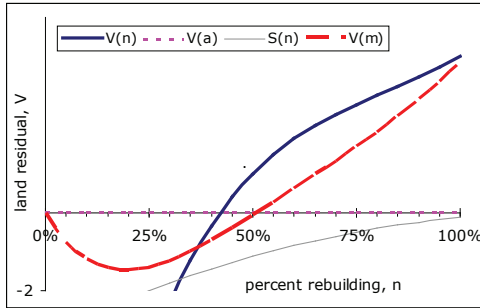


Figure 2.2.4 Detailed Neighborhood Model

$V(n) = P(n) - C$
 $V(a) = 0$
 n = rebuilt property
 a = abandoned property
 C = construction & repair costs
 $V(n)$ = property land residual
 $V(a)$ = abandonment value
 $P(n)$ = property market value

 $S(n)$ = social cost
 $V(m)$ = municipal / social value

benefit of n , such that changes in the population n have a cumulative effect. A social cost S which decreases with n is also added, and is shared among a larger municipal population m , such that $V(m)$ represents the residual land value less social costs. Taking this figure as a model for redevelopment values, and assuming the population n is sufficiently large, a complication arises in that it becomes individually preferable to rebuild (here where $n \approx 42\%$) before it becomes socially preferable (where $n \approx 50\%$). Thus there are three regions of the graph which are important to consider:

Where $V(n) < 0$: any rebuilding is inefficient both socially and individually.

Where $V(m) < 0 < V(n)$: rebuilding is individually profitable but socially costly. Intervention would be necessary to prevent a socially inefficient outcome. However, n would tend to increase naturally, if parties' choices (to abandon) are reversible.

Where $V(m) > 0$: Rebuilding is socially and individually preferable. Market forces would push n to 100%, assuming reversible decisions.

By showing where stable equilibria can occur, this analysis can be quite useful in crafting a solution. With the significant assumptions that the individual and social costs and benefits can be readily ascertained, and that the appropriate legal instrument is available, enforcing a minimum threshold for n (like the 50% considered by BNOB) would be adequate to get the neighborhood past the tipping point to support both individual and social values. Whether such information and legal devices are available, and the implications of such an autocratic solution are reviewed later.

Before proceeding, it is worth noting that abstract modeling and assumptions of rational

behavior may obscure or miss certain elements of the decision process. The role of incommensurable values, emotions, and the idiosyncrasies of humans and their interactions should not be ignored or underestimated; this matter receives further treatment in Section 3.4. Likewise, some of the assumptions about the shape of the game are revisited in Part 5.

The next section turns to two further issues that must also be taken into account: that there may be inadequate demand (or rebuilding capacity) to rebuild all neighborhoods in the near term; and that any one neighborhood might be more profitably rebuilt for different users or at a different scale/density.

2.3 Competition

Population forecasts show New Orleans residents slowly returning to the city over the course of a decade or more (McCarthy et al., 2006). While it remains unclear whether housing supply, demand, or other factors will be responsible for this slow re-population, planners and residents must be prepared for the city's low overall density, and some neighborhoods may find insufficient demand to be truly viable. Likewise, existing patterns of development may be ill suited to current and future needs, and owners may find different uses bidding for their sites. The implications of these two conditions are illustrated here.

Consider a city of two neighborhoods with equal capacity but demand sufficient only to fill one. How the population gets distributed will depend on several factors. Assuming agglomeration benefits outweigh the benefits of low density, Figure 2.3.1 shows the essence of the relationship*. The horizontal axis shows the percentage of population in neighborhood A, and the vertical axis shows land values, V . Property values in neighborhood A are shown by the solid line $V(n_a)$, value for a property in B is shown by the dashed line $V(n_b)$. Residents would be best off if all were in A, but they would be better off if all were in B than if they were dispersed between

* Where low density provides greater benefits, the curves will rise toward each other from the edges.

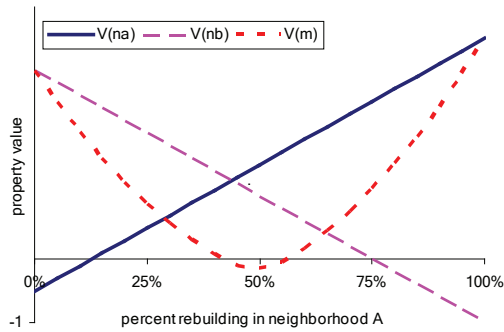


Figure 2.3.1 Competing Neighborhoods or Uses

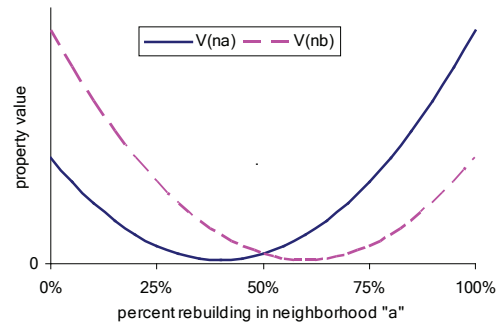


Figure 2.3.2 Competing Neighborhoods, Alternative Uses

the two. Aggregate social value is represented by the dotted line $V(m)$, and as before, dispersed populations may be individually profitable but socially costly.

This problem is quite similar to the assurance game in that the parties' optimal choices are the same. However, as depicted, they would be nearly indifferent between the two choices as long as they all made the same choice. If all knew that A was preferable to B, then it would be an easy choice. If transparent, costless communication were possible, the parties might come to an agreement. But many complicating factors can interfere - inertia, slightly differing individual preferences between the two neighborhoods, etc. Like the assurance game, what may seem like an obvious solution from a global perspective can be maddeningly difficult to work through when many parties are involved. Again, the coordination problem may result in the lower-risk, lower-payout outcome, whereas if a single authority could make the decision a preferred outcome might ensue.

The same graph can also represent the second case, where two alternate uses might occur in one neighborhood, and members of each group would prefer to be collocated with their group. Here, the thick line represents values for use A, and the thin line shows values for use B. The same difficulties and potentially sub-optimal outcomes result. Combining these two cases yields an outcome that might look like that in Figure 2.3.2. With two uses and two neighborhoods, all will be better off if they segregate, and they would tend to with adequate coordination.

Each of these cases further illustrates the coordination challenges that interdependent decisions present. They begin to suggest solutions as well - authoritarian control or unitization

are two that might come quickly to mind. More to the point, the examples show how nuanced the problems are, and the solutions must be. It is easy to imagine that in one case a single party's declaration of intent to build in one neighborhood would be enough to tip the outcome in one direction. Elsewhere, a much larger concerted effort may be needed. In any case, as with the single neighborhood analysis of the previous section, it should be clear that individual decisions can have far ranging consequences for the larger group, and vice versa.

2.4 Summary

The previous discussion illustrated the benefits of agglomeration, and showed that external effects can have significant impacts on individual property prices. These external effects make rebuilding decisions difficult, particularly so because the individuals' outcomes are interdependent. Reducing the decision paths to a game theory model yields an "assurance game", whose distinguishing feature is that preferred outcomes result when parties make the same choice. The choice to build was shown to be socially preferable. However, assuming a single-round rational-player framework, parties might not choose to build because it carries greater risks than the alternative, when other parties' choices cannot be anticipated. Allowing for sequential play, after a certain percentage of players elects to build, others will naturally follow suit.

Similar complications presented when more than one neighborhood was competing for residents, and unpreferred outcomes may result when choices are not coordinated. These abstract models do not take differing risk preferences, social norms and customs, subjective values, or historical context into account. Each of these may affect outcomes, and are reconsidered in Part 5.

3 Market Response

Part 1 ascribed two assumptions to the policy recommendation to limit rebuilding in certain areas: that a minimum population was necessary for fiscal reasons, and that the market would fail to consolidate that minimum population in those areas. Part 2 developed a model which showed how property values might relate to population, and suggested that without a mechanism to coordinate many owners' investments, that minimum level might not be attained. Here in Part 3, the market's potential to respond through land assembly is considered.

Land assembly is the usual term for the process whereby a developer purchases several contiguous properties from separate owners in order to undertake a large project. As the previous chapter shows, an area's highest potential value may not be achieved because of coordination problems among multiple owners. On its face, assembly seeks to overcome those coordination problems by aggregating ownership. However, as illustrated here, the assembly process itself is subject to the very same difficulties it tries to overcome.

Necessarily, a market-based land assembly will be undertaken only when the value of the parcels combined is greater than the sum of their market values as individual going concerns. A number of factors can contribute to this greater value, including: a change of the property's use, building density, externalities, and economies of scale. Several of these were introduced in the previous chapter, and are discussed further in the context of assembly here. However, the primary focus of this chapter is on mapping the assembly process and the free market framework within which it unfolds.

Section 3.1 discusses the relationship between market prices and individual parties' valuations, and the resulting implications for land assembly pricing. Section 3.2 introduces issues of strategic behavior and the hold-up problem. Section 3.3 brings the social context to bear; and Section 3.4 closes with a discussion of the circumstances where market-based assembly might or might not be appropriate.

3.1 Market Value

A fundamental problem in land assembly, or any real estate transaction for that matter, is determining the price at which any given property should or will sell. Part of a property's value depends on its geographic characteristics, and depends on its location relative to other localities. Another element of its value is derived from uses allowed by government authorities. A given property may also be assigned a different "inherent value" by different parties depending on their use or investment criteria, hereafter referred to as subjective value. Not least, a current owner may value his property more than an equivalent one due to the costs of relocating, unique improvements, or sentimental attachment. All of these elements conspire to make property valuation and pricing an imprecise and dynamic undertaking.

The term market value as applied in this context deserves some attention. Because properties are unique assets that trade infrequently in privately negotiated transactions, there is not an authoritative source for a given property's true market value – the price we might expect it to sell for on average (Geltner & Miller, 2001). As noted above, different investors will assign different inherent values to any given property. For a transaction to occur, a buyer's subjective value (and reservation value) will be at least as much as the seller's. With enough transactions of similar properties, a statistical mean of those transaction prices can be derived that describes the average price that an average buyer/seller pair currently in the market would agree upon (ibid.).

Consider a typical distribution of potential buyers and sellers for a certain property type, as illustrated in Figure 3.1.1 (adapted from Geltner & Miller, 2001). Buyer's subjective values range from A to F, while seller's range from B to G*. While B and F are the expected limits for transaction prices in the market, they will tend to occur in the narrower range between C and E as a function of price discovery. Market price is approximated by point D. Assuming that most

* Assuming some degree of equilibrium and information in the market. In a rapidly devolving market, it seems theoretically possible that the valuation curves are temporarily in an opposite arrangement. Given the strong pace of the metro New Orleans property market (Saulny, 2006a) it seems likely that there is adequate price discovery there to prevent such an unusual occurrence.

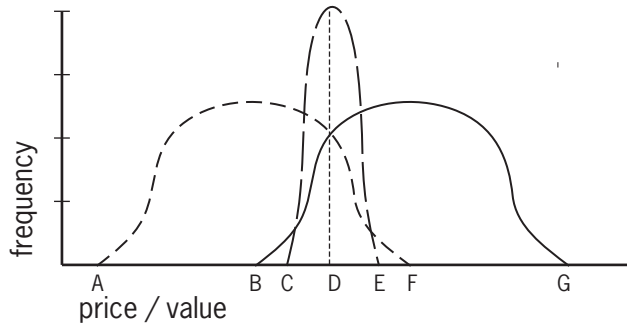


Figure 3.1.1 Market Price and Subjective Values (adapted from Geltner & Miller, 2001)

properties will eventually trade hands (and with evidence that market prices are fairly stable in the long run (Eicholtz, 1996)), one can expect that on average, owner's private valuations will arrive close to the market price D at some point in the future. However, in the short term they will range between B and G. This has strong implications for assemblers, as discussed below.

Land assembly is a special case in that often the targeted properties have not been offered for sale. By extension, one might assume that its owners attach a greater inherent value to it than the market value, or otherwise they would already be offered for sale. Other possibilities are also worth considering: the owner may not have good information about market value, or the transaction costs of the sale (perhaps combined with a replacement purchase) might negate any potential gain. Nevertheless, for any set of targeted properties, one can expect that targeted owner's valuations will tend to resemble the distribution curve B-G. Thus, to the degree that specific properties are required for the assembly, or if the active market is small relative to the set of targeted properties, assemblers will necessarily have to offer prices that on average are greater than market value (Evans, 2004).

Figure 3.1.2 (adapted from Munch, 1976), shows mean market prices, MC_m as constant, and the assembler's marginal cost (MC_a) as an increasing function of the number of properties assembled. Given a longer time horizon for the acquisitions, the assembler will be able to find a greater share of the properties on the market, and MC_a will lie flatter, approaching MC_m . Conversely, with less time available, fewer properties will be on the market and the supply curve will be steeper, resembling MC_b . The same relationship holds with respect to the assembly's size: the

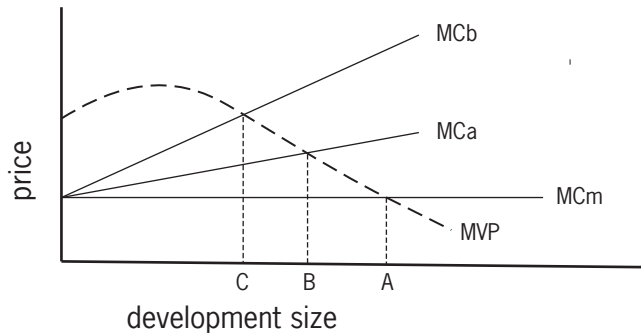


Figure 3.1.2 Land Assembly Supply and Demand (adapted from Munch, 1976)

more properties required (or the smaller the market is relative to the stock), fewer will be on the market and a steeper curve representing higher prices will result. Likewise, greater fragmentation of ownership will have the same effect – where the average parcel is smaller, more are required for a given size development, and higher prices will result. Note that the differentials here are a result of acquiring properties at their owner’s “off market” valuations, and do not suggest inefficiency per se. One could argue that there is a structural inefficiency inherent in private ownership for this very reason. But regarded from within the system, it would be incorrect to characterize this disparity between owner valuations and market prices as economically inefficient.

The optimal development size (where the MC curve meets the demand curve MVP*), is a decreasing function of the speed of assembly, the size of development, and the degree of ownership fragmentation. There is some empirical evidence that supports the expectation of higher marginal costs for larger developments. In an analysis of Chicago area land prices, Colwell & Munneke (1999) find an elasticity of demand greater than unity with respect to parcel size for residential property – indicating price convexity or higher marginal costs for larger properties†.

In summary, an important point about land assembly projects can be made. Marginal

* The assembler’s demand curve (MVP) is shown here to slope upward initially as a result of internalizing externalities (Munch, 1976) or economies of scale, but decreases at some point due to dis-economies of scale (Evans, 2004). The previous chapter assumed gains from externalities and economies of scale, and did not explicitly model dis-economies of scale. Regardless of whether or where these occur, the main point holds: that marginal costs are an increasing function of time and development size.

† Some studies have in fact shown the opposite or mixed results, and even Colwell & Munneke’s results vary considerably based on usage and distance from the city center. Where the costs of subdivision are greater than those of assembly, one would expect to see price concavity. Prevailing land use, sale transaction costs, marginal cost of construction with respect to parcel size, and several other factors will also influence the observed relation between

costs of assembled land are higher than market prices for smaller parcels of similar land, and are increasingly so, the greater the speed or size of development or existing level of ownership fragmentation. Corresponding to these higher costs, optimal sizes for assembly projects are smaller than comparable projects would be on “virgin” land acquired at market value. This differential could be considered as a measure of the cost/value of a private ownership system. The general rule of price convexity with respect to size holds irrespective of strategic or irrational behavior on the part of owners which, as the next sections show, can have a similar effect.

3.2 Strategic Behavior

Earlier it was noted that land assemblies will necessarily occur only when the assembled property value is greater than existing value before assembly. What follows is an exploration of the challenges of distributing the resulting surplus value among the assembler/purchaser and the owner/sellers, and how strategic opportunism can lead to inefficient outcomes.

In a typical assembly case, a block containing run-down row houses worth \$100K each could be combined and renovated to yield two condominiums per house worth \$75K each. Say that the project costs include \$10K per condo unit in renovation costs, plus \$50K in shared amenities. There are ten houses on the block, and for each one that does not participate, average condo prices will drop \$5K. Figure 3.2.1 illustrates the case, and shows an increasing relationship between units participating and total profits. If no assembly takes place, profits to each owner and the developer are zero.

Figure 3.2.1 visually resembles Figure 2.2.3, and not surprisingly this case is again quite similar to the assurance game. However, where before individual profits were interdependent, here only the total profits are dependant on the number of participants, and the profit distri-

parcel size and price. Despite its importance, this remains an area of land economics with considerable room for further empirical investigation.

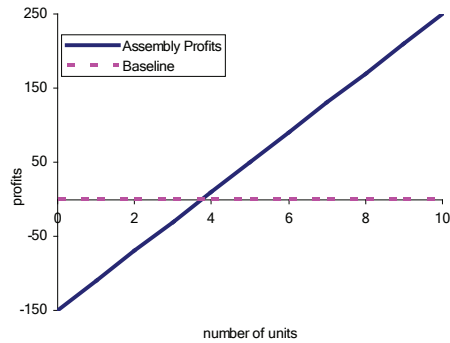


Figure 3.2.1 Land Assembly Profits

bution is not fixed. Obviously, a value creating (Pareto improved) outcome is possible in this scenario, and the socially optimal outcome is for all to participate (leaving aside the issue of subjective values). However, a distributive problem remains, which is inexorably tied to the issue of value creation*. Should the developer negotiate privately with each landowner – concurrently or sequentially, or as a group? Should the last landowner to settle receive a larger share of profits? Would it make a difference if the profit curve were convex? Lastly, what if an owner could realize even higher gains by not selling?

Eckart (1985) explores a similar model to the one above where a developer seeks an exact set of parcels, and negotiates with their owners through one round of offers and counter-offers. From this simple scenario, Eckart derives a number of results. First, if landowners coordinate, the settled price tends to be lower than if they do not. This is because the coalition disallows a high price which any individual might be able to negotiate for a given parcel, but which would jeopardize the transaction if all sellers asked such a price. Second, absent a coalition, smaller landowners will have higher asking prices (per unit of area) than larger ones, as a relatively high price for a smaller parcel will be less likely to jeopardize the success of the transaction. Holding other variables constant, it follows that deals involving more landowners will be higher priced, as they will be comprised of proportionally smaller landowners. The results correspond closely to

* See Mnookin, Peppet, and Tulumello (2000) for a thorough discussion of the tension between distributive issues and value creation in the context of negotiations.

those of Section 3.1, but for rather different reasons.

What follows from Eckart's results is that the coalition has a greater probability of striking a deal, and thus overall would be better off than sellers acting independently. However, small landowners might do better to avoid the coalition. A partial coalition would not suffice though; it would act like a single large owner, and would lose rents relative to non-cooperative sellers. This example again shows the coordination challenge inherent in a multiparty scenario where profits are a function of externalities and/or economies of scale. A number of economists have studied the land assembly problem, and a few of their key points are worth noting here.

Mailath and Postlewaite (1990, p. 351) find that as the "number of agents increases, the probability of an affirmative efficient decision goes to zero". Cai (2000) explores the number of rounds necessary to complete the transactions in an infinite horizon game and finds that delay increases disproportionately with the number of participants, and that with as few as three sellers, perpetual delay can occur in equilibrium despite the profitability of the transaction. Menezes and Pitchford (2004) obtain similar results when they relax the requirement that all parcels must be acquired, and explain that where parcels are better complements to each other (i.e. generate greater positive externalities), holdout is more likely to occur. They also note that coordination among sellers does not necessarily equate with cooperation with the buyer: sellers may devise an 'anti-coalition' strategy, where sellers agree to negotiate sequentially.

From these examples it is clear that an efficient outcome is far from guaranteed. While a coalition of sellers may improve the likelihood of an efficient outcome, the coalition itself does not form spontaneously, and does not necessarily form in equilibrium. Indeed, small landholders in particular have the same incentive to hold out from the coalition as they do to hold out in independent negotiations. But perhaps the buyer can force the sellers into negotiating as a block?

If the buyer committed to negotiating only with a coalition, sellers might find it in their best interest to coordinate. But the credibility of the buyer's commitment is tenuous at best. If one seller reneges after the others have transacted, it is likely still in the buyer's interest to

renegotiate. The buyer's commitment to completing the acquisition is often in conflict with his commitment to follow a given process. Thus without an enforcement mechanism, commitments may be meaningless.

Whether parcels are viable substitutes for one another is a factor which affects the likelihood of efficient outcome, if there is flexibility within the set of parcels that will serve the buyer's needs. This of course reduces the monopoly power of any single landowner. However, given externality effects, owners may have a diminished incentive to sell if their property value will increase when development proceeds without them, as noted by O'Flaherty (1994). Having two discrete sets of parcels between which the purchaser is indifferent could substantially improve seller incentive to coordinate, though this benefit may be offset by increased transaction costs, and the practical difficulty of finding two sets of parcels between which the buyer is indifferent.

From this discussion, it is clear that conflicts over the distribution of gains from assembly can severely limit the total gains realized. This result becomes more acute, the more parties that are involved. Coalitions of sellers can improve the likelihood and scale of successful development, but may not serve to equalize payments among sellers. Reducing monopoly power of sellers by finding substitutes for parcels or whole sets of parcels may improve outcomes, though with some transaction costs.

Notably, these results align quite well with the model's results in Part 2. Committing to follow a certain course of action leads to preferable results, but without enforcement mechanisms parties have a strong incentive to renege. The presence of substitutes or competitive properties can greatly affect profitability. The potential for strategic behavior limits the number and size of land assemblies which will likely be successful, compared to cases where strategic behavior is not possible. However, this does not suggest that strategic behavior is inefficient per se - unless all the costs of a world without it are also taken into account.

3.3 Irrational Behavior

A purely economic analysis of land assembly misses many rich elements and peculiarities which characterize both its process and outcomes. Section 3.1 noted that individuals' private (or "subjective") values are often higher than market values, sometimes due to uniquely valuable improvements (e.g. a wheelchair ramp). Here we stop briefly to consider the effects of subjective value, and other idiosyncrasies that can interfere with a strictly rationally conceived process.

That a property might hold sentimental value for its owner should not be surprising. But its impact on assembly is wide ranging, and actually linked to the strategic behavior discussed earlier. Incomplete information with respect to other parties valuations, combined with individuals' cognitive bias, is a major source of unsuccessful or suboptimal transactions. Empirical studies show cognitive bias to be far reaching (Bazerman & Neale, 1995). The endowment effect refers to people's tendency to value objects higher, simply as a result of their possession. Likewise, people tend to view transactions as more or less fair, depending solely on whether they are the offeror or offeree. Other studies have shown that people do place a tangible value on fairness, and in some cases will elect to forgo individual profits (and a Pareto-improved outcome) where they feel they are being treated unfairly (ibid.).

Each of these findings suggests that in interpersonal transactions, form may matter as much as substance, especially when one party has a deep personal interest in a property and the other party's interest is strictly financial. Alpern and Durst (1997) collected dozens of examples of land assemblies where impasses were reached with truly unfortunate results, such as a sleek New York office building cantilevered over a ramshackle corner bar. The grotesque results are not only sad in their own right, but have farther reaching implications. To compensate for higher risks, developers seek higher returns, and consequently an inefficiently small number of assemblies may be undertaken. Said differently, land assemblies fail because developers often do not realize the subjective value of property to its owners. It is worth remembering that what may appear as irrational behavior, may simply be an individual acting according to unexpected preferences.

3.4 The Case for Assembly

Fragmentation of land ownership often occurs as an artifact of history. Land uses and needs are dynamic, and evolve over time. These facts, combined with the difficulties of many owners jointly coordinating external effects of their investments, can lead to under-investment. A land assembler seeks to extract gains from the properties by bringing the many properties under single ownership, thus internalizing those effects while also realizing economies of scale.

Assembly may lead to socially preferable land usage. Where economies of scale or a minimum parcel size are required for a development such as an office tower or a supermarket, assembly makes reasonable sense. However, where direct or representative collective action cannot solve coordination problems in order to manage externalities, assembly may fall victim to the same problem. Furthermore, where assembly does not successfully occur, it does not necessarily follow that the result is inefficient. Private land ownership gives owners intangible benefits which are difficult to account for. While fragmented ownership may appear to be inefficient it is unclear, after taking subjective and incommensurable private values into account, whether unitizing ownership is actually preferable. What is gained financially may be lost in public goods such as a sense of place, community, or even fairness.

4 Government Intervention

This document began with the assumption that government intervention would be warranted where the market failed to generate a critical mass of population in a neighborhood. Parts 2 and 3 showed that neither existing owners nor developers were assured in their ability to accomplish this. Given that democratic government by its very nature derives power from, and acts as an expression of the collective will, intervention may seem appropriate or necessary. However with individual rights and private property so fundamental to liberal democracy, one might expect reluctance toward a government too readily intervening in the private affairs of its people. Thus, in addition to specific strategies, this part addresses some of the concerns raised by government involvement generally.

Section 4.1 begins with a brief restatement of the problem that invites external intervention. Section 4.2 outlines the legal principles at hand. Privatization and eminent domain are placed in context in Section 4.3. The focus of Section 4.4 is on methods of regulatory intervention, specifically the subsidy program which Louisiana has established for those who experienced property damage from the hurricane. Section 4.5 reviews the applicability and relative advantage of each approach.

4.1 Problem Restated

The issues raised in Part 2 would generally fall under the rubric of collective action problems, and are quite similar to that most familiar one - the tragedy of the commons. There is a slight difference, elaborated below. But both the problems and the normative strategies for intervention operate along the same lines. The commons tragedy arises where several parties have unrestricted access to a limited common resource. Aristotle sums it up neatly:

Property that is common to the greatest number of owners receives the least attention; men care most for their private possessions, and for what they own in common less, or only so far as it falls to their own individual share; for in addition to the other reasons, they think less of it on the ground that someone else is thinking about it. (Politics, 360 B.C., 1944)

Predictably, as with most cases of negative externalities, parties are prone to over-utilizing the resource (or under-compensating for its depletion) because individually they realize less of the cost from their use than the gain from it. So in a shared access pasture, each herder may bring more than his “fair share” of cattle than the land can support, or perhaps does not work hard enough to replant the grasses, and the result is many thin cattle when fewer fatter ones would sell at a better profit (, 1968). The trouble is “the individual actors fail to internalize all of the costs or benefits of their actions” (Fennell 2004, p.930), and the traditional solutions work to make those costs and benefits internal to each actor.

One normative solution to the collective action problem operates upon the “collective” element: by privatizing the commons, it divides interests in and dominion over the resource so that within each fragment all costs and benefits are realized internally, and group decisions become unnecessary. A second genre of solutions operates on the “action” side of the problem, with an external authority regulating and enforcing the parties’ actions.

There is a slight but important distinction between the traditional commons tragedy and the redevelopment challenge - in the first instance inefficiency results from over-use of the resource (free riders), while in the latter under-use is at the root of the problem (not enough

riders). Heller identifies this “mirror image” of the commons tragedy (1999, p. 1166) as a tragedy of the *anticommons*, where the problem is not common access to a shared resource, but a shared right of exclusion from a resource which leads to its under-utilization. Fennell (2004) gives an example of a park owned in common by ten parties. Over-utilization might result from the tendency to under-protect the resource: each party may try to free-ride on the others’ protection measures and not bother protecting it from trespassers in the first place. More frequently, (where protection is inexpensive) the opposite occurs, where each owner might place a separate lock on the park gate, and the park is used infrequently (if at all) because of the difficulty in opening all of the locks to gain access.

In our case, given that a portion of each property’s value depends on neighboring owners’ decisions regarding their own property, this “externality value” is a class of anticommons. Each owner’s decision to (not) rebuild has a positive (negative) effect on other property values and on other owners’ propensity to rebuild. The tragedy is that all would benefit if that shared externality value could be “unlocked” by all rebuilding.

For unlocking the potential value of several properties in neighborhood redevelopment, we find normative solutions that resemble those for the commons. The first is privatization - through eminent domain or similar means it reallocates ownership in order to internalize investment value, and may also leverage economies of scale or adjust the property’s use or density. In the second solution the government influences or guides development through regulation, such as subsidies or zoning controls.

While the objectives of government intervention may seem clear, their execution must necessarily balance economic efficiency with other strong principles that guide and control government action. The next section reviews those principles in the context of our system of private real property.

4.2 Legal Principles

Our government is a complex web of local, state, and federal jurisdictions, each itself made up of executive, legislative, and judicial authorities. Legal precedent (including common law, natural law, and civil statute), budget processes, and political exigencies all influence how and where government can act. Most of these intricacies can be little more than acknowledged here. Instead, this section discusses general considerations and principles guiding government control and intervention, and the sections that follow explore their application in a few relevant settings.

There are a few basic rationales for government intervention in the affairs of real property ownership, management, and use. Chief among these reasons are economic inefficiency - when the unencumbered market fails to allocate scarce resources in a way that maximizes aggregate benefits; social equity or fairness - when costs or benefits disproportionately accrue to some segment of the population; and public welfare - when health, safety, or the public good are at risk. It should be no surprise that these are the very same issues that were selected as measures of effectiveness back in Part 2. Indeed, they are each greatly important matters, fundamental to societies.

The efficiency argument is perhaps as old as the study of economics, intractable at times because it can cut both ways. Regulation may seem a natural solution where the market does not realize available economies of scale, or fully account for externalities. But regulation itself comes at a cost. Writing of negative externalities, Coase notes that “it will rarely be efficient to eliminate all nuisance costs, since that action will ordinarily require unacceptable levels of prevention costs.... and there is no reason to suppose that government regulation is called for simply because the problem is not well handled by the market or the firm” (1960, p. 18). Nevertheless, there are cases where it may be warranted:

Regulation [may] lead to an improvement in economic efficiency. This would seem particularly likely in cases when... a large number of people are involved and in which therefore the costs of handling the problem through the market or the firm may be high (ibid).

Notably, Coase’s prescription corresponds well to the results of the theoretical model results

from Part 2: where more people involved, a problematic outcome is more likely, and so perhaps external control is more warranted. Clearly, bona fide arguments can be made for intervening to prevent the market from achieving inefficient outcomes, and the fragmentation/coordination problem may be such a case. For example, laws covering both inheritance and zoning have provisions that seek to prevent excessive, inefficient fragmentation of interests in land (Merrill & Smith, 2000).

While the government has a duty to take into account the economic impacts of its actions and policies, the “bottom line” clearly does not tell the whole story. The equity principle often stands in opposition to that of economy, while remaining a bedrock principle of society. The system’s total cost is important, but so is the distribution of that cost:

“We cannot stand on the assumption that efficiency is the only goal. Few people any longer doubt that governments are properly engaged in controlling the distribution of wealth... as well as in controlling resource use so as to maximize the aggregate social product” (Michelman 1967, p. 1183).

Michelman highlights distribution of wealth as an equity issue, but there are other distributive issues that might be taken into account - access to public services, exposure to pollution and environmental control - which may or may not be subject to wealth effects. These issues may not be reducible to quantitative assessment, and interpersonal comparison of utility is an inexact endeavor (Ellickson, 1967; Mandelker & Payne, 2001) So the government must be cautious to avoid a narrowly rational approach on one hand, and one whose subjective values may be suspect on the other hand.

Inequitable urban development has a long history in our nation - from the racial zoning laws of Reconstruction to targeted investments of the Progressive Era, to slum clearings and urban highway projects of the post-war boom.* Notably, government has often been implicated in these events - haunting examples of suspect values systems. While the trend today is certainly

* See Colten (2004) for a thorough account of the social and geographical history of New Orleans’ inequities.

toward government as a protector of minority rights, one might also be rightly concerned with a “tyranny of the minority” replacing the majoritarian one. Indeed, a too strenuous protection of minority rights can be seen as the basis of the holdout problem in land assembly.

The third rationale for intervention - supporting public health and welfare - is embodied in two main principles: torts and the state’s police power, and is often in direct conflict with usual conceptions of property rights. (Welfare refers here to the general good, not exclusively to social safety net programs.) Nuisance torts are embodied in the principle *sic utere tuo ut alienum non laedas* - the use of one’s property should not harm one’s neighbors. Importantly, this principle severely circumscribes Blackstone’s premise of property as “that sole and despotic dominion which one man claims and exercises over the external things of the world *in total exclusion of the right of any other individual*” (1765, emphasis added). Indeed, Chief Justice Andrews nearly replaces Blackstone’s notion with a sort of liability rule - that one’s property right “is restrained by the co-existence of equal rights in his neighbor, so that each in exercising his right must do no act which causes injury to his neighbor” (*Booth v. Rome, W. & O. Terminal R.R. Co.*, 1893). The friction between property rights and liability rules is long standing, and also might be a useful way to frame the holdout problem (Epstein, 1997)*.

Police power is the broad authority of the state to regulate the affairs of the people to advance the public welfare. It extends to “public convenience or general prosperity as well as to public safety, health, and morals, and is not confined to the suppression of what is offensive, disorderly, or unsanitary, but extends to what is for the greatest welfare of the state” (Congressional Research Service, 2000). Two centuries ago, Chief Justice Marshall labeled it “that immense mass of legislation, which embraces every thing within the territory of a State, not surrendered to the general government” (*Gibbons v. Ogden*, 1824) and he would likely be surprised to see how it has grown since then.

* Recalling Calabresi and Melamed (1972), Epstein notes that the property right/property rule gives rise to the holdout problem, as the owner retains exclusive power to determine the property’s disposition. Strictly speaking, a liability rule denies the owner exclusivity, enabling another individual to take it at fair value (1997, p. 2091).

In the U.S., police powers touch the land particularly through zoning ordinances. Whereas nuisance law functions to compensate for and avoid negative externalities, zoning might be seen to do that *and to foster positive externalities* by ensuring adjacency of similar use and enforcing consistency of building size, setbacks, etc. Zoning is a complex and important municipal tool for growth control, environmental protection, and a host of other social goals. Notably, while zoning has blossomed since its introduction 90 years ago, several private supplements or alternatives have also found ascendancy - such as covenants and deed restrictions.

Outfitted now with these three bases for government control - efficiency, equity, and public welfare - the discussion proceeds to the two primary categories of intervention in commons problems, and considers their competence in meeting our objectives.

4.3 Eminent Domain

Eminent domain was considered so fundamental a government power, the Supreme Court declared “It requires no constitutional recognition; it is an attribute of sovereignty” (*Boom Co. v. Patterson*, 1879). Indeed, the only mention of the takings power in the Constitution is the tacit acknowledgement of its existence and the limitation imposed upon it by the Fifth Amendment, that states “private property [shall not] be taken for public use, without just compensation.” Nevertheless, few issues are as hotly contested as the appropriate boundaries of this power. Generally, the power of expropriation and the law that restricts it can be seen to operate in three roughly distinct areas: takings for tangible public use; those from which the public derives intangible benefits; and those that result indirectly from government action or regulation.

The canonical case for eminent domain might be a railroad or interstate which must pass through a particular area. If the government were unable to acquire even a small stretch of the

required path, the project would fail. Similarly, a government agency* may find that it needs property in a specific area in order to carry out its mission, such as an expansion for a local school. Eminent domain prevents landowners from being able to extract exorbitant prices (or scuttle the project altogether) solely because of the monopoly power of their property's unique physical location. Thus the first "domain" of eminent domain is takings for use by the general public or a public agency. It is the most straightforward, and attracts much less attention and public ire than the other two.

The second area where eminent domain is used centers around the meaning and limits of the "public use" limitation in the takings clause. The 2005 Supreme Court decision in *Kelo v. City of New London* brought this question into sharp public focus. In that case, residential property was taken in order to implement a comprehensive redevelopment plan which included placing privately owned and operated commercial enterprises on the condemned land. The taking was upheld, with Justice Stevens' majority opinion noting "The city has carefully formulated a development plan that it believes will provide appreciable benefits to the community, including, but not limited to, new jobs and increased tax revenue."

The third area where takings can be at issue occurs when a government regulation or use restriction effectively curtails all economic use of a property by its owner or other interest holder. Many current regulatory takings cases involve environmental regulation such as wetlands protection (Meltz, 2005), though historic preservation, zoning, and other land use rules have also been argued as unconstitutional takings, with varying degrees of success (Mandelker & Payne, 2001). Generally, where courts have found regulatory takings to have occurred, it has not been an explicit objective of the regulation or agency action, but an unintentional or unavoidable consequence of the exercise of other authorized powers such as the police power. In that sense, the takings clause upholds property rights against unwarranted or excessive incursions by the

* A quasi-government authority, or a privately operated common carrier such as an airport might typically be included in this category as well, and are often granted eminent domain rights through their charters.

government.

Each of these three realms - public facilities, comprehensive planning, and land use restrictions - might find relevance in a rebuilding strategy such as those being contemplated for New Orleans. This section focuses on the second instance - where physical taking occurs, and specifically those where the goal is economic development by delivery of an assembled parcel of land to a developer.

Eminent domain's use in urban land assembly and redevelopment has a long history before *Kelo v. New London*^{*}, and its use since the 2005 decision remains strong.[†] Primarily, it is seen by government administrators as an effective and efficient means to guide economic development and reshape outdated land use patterns. Despite great interest by the public, legal, and economic scholars alike, the complexities of the subject do not readily lend it to empirical study. Nevertheless, the following considers the use of government takings relative to private assembly, in terms of both efficiency and equity.

The economics of land assembly do not differ in cases where a government is the buyer, from those where private parties are buyers, with one obvious and major exception - the government has the authority to force a transaction at its assessment of fair market value. The dynamics of assembly were treated in detail in Part 3, and many of the insights gained there can be applied here. There, it was suggested that on average, owner valuations tend to be higher than market values. Thus, where market value is indeed the transaction price, owners on average will tend to be under-compensated[‡]. However, this does not necessarily suggest an efficiency loss, in and of

* See e.g. *Berman v Parker* (1954), a case stemming from the postwar effort to redevelop a blighted section of Washington D.C., which on the merits was quite similar to *Kelo*. In contrast to *Kelo*, the unanimous Warren Court was unapologetic and almost smug in its support of the government's position, noting "If Congress decides that the Nation's Capital shall be beautiful as well as sanitary, there is nothing in the Fifth Amendment that stands in the way."

† The number of economic-based eminent domain initiatives in the first year following the *Kelo* ruling was more than double the average of a recent five-year period (Berliner, 2006).

‡ Statutes vary by state though generally, as with federal standards, they do not account for goodwill or other intangible or subjective values, though relocation assistance and payments are often provided. While cash payments established by jury or administratively are the norm, see Costonis (1975) for an innovative perspective on in-kind

itself.* But it does seem to strike rather forcefully against the equity principle - that an individual should not be forced to bear a cost whose benefit will accrue to the public.

An argument might be made that compensating for owners' subjective valuations is too uncertain or difficult, and that by holding that potential loss to the individual (unfortunate as it may seem), transaction costs and the potential for rent seeking by the individual are reduced. However, under-compensation might lead to an efficiency loss in its own right. Innes (1997) constructs a theoretical model which suggests that undeveloped land is systematically under-compensated for, in which case land owners have an incentive to develop their property at an inefficiently early date as a safeguard against uncompensated losses. At the same time, efficiency loss could result from systematic over-compensation, by leading to under-use of eminent domain because of the prohibitive cost (Munch, 1976).

In the only empirical study to date of eminent domain transactions, Munch (1976) makes a particularly troubling finding. Comparing transaction prices with tax assessments and estimated market values, she finds that lower valued properties are systematically under-compensated for, and higher value properties systematically over-compensated for. She convincingly builds and tests a hypothesis that the expected value of jury payouts allows owners of higher-valued properties to extract a surplus through the threat or use of legal challenge, while for lower value property owners, legal battles cost more than they reap. This makes intuitive sense, and if it holds generally is a clear marker of inequity.

These several points show that the equity principle is poorly served by eminent domain. Land owners subject to eminent domain often bear a disproportionate cost, relative to the overall

arrangements and other means of providing "just compensation". For discussion of under-compensation, see Section 3.1, and e.g. Ellickson (1973), Munch (1976), Fennell (2004); or for the opposite perspective, Garnett (forthcoming).

* Some aspects of an owner's subjective value are indeed nontransferable (Fennell, 2004). However, the determining factor for efficiency is the land's opportunity cost - the net difference between the buyer and seller subjective valuations plus externalities.

public. Furthermore, lower income owners bear an even higher proportional cost, and may be inequitably targeted for eminent domain. As for efficiency, benefits relative to private assembly are far from certain. A forced transaction at market price does not necessarily result in an efficiency gain. It may simply reflect a transfer of costs, and in some instances it may give owners a perverse incentive to over-invest. While eminent domain may increase development size or speed, the cost and time incurred from litigation may offset these gains. Welfare effects are much harder to quantify in the abstract, though the trade off is clear. In exchange for a centrally planned bureaucratic vision of an area's future, owners sacrifice autonomy and self-determination. Especially considering the less drastic means covered in the following sections, as a general tool for economic development, eminent domain seems a heavy handed approach at best whose net benefits have yet to be shown.

4.4 Regulatory Control

The government has several means to guide and control real property ownership & usage separate from redistribution of ownership. Common measures include zoning and building codes, environmental protection, and of course the provision of infrastructure. A common government tool for spurring urban reinvestment, and the focus of this section, is subsidies. Specifically, this section considers the Louisiana program established to reimburse property owners for losses incurred as a result of the 2005 floods.

The rationale behind subsidies is quite simple, and is founded in the principles of equity and public welfare. A subsidy ostensibly works to increase production or consumption of a good where the net social benefit will increase as a result of the increased production/consumption. In other terms, part of the social value from the activity is realized *external* to its individual producers and consumers. Of course, this aligns closely with the housing value model developed in Part 2, which suggested that individual properties created positive benefits for neighboring properties.

Funding for Louisiana's "Road Home" program comes from the U.S. Department of Housing and Urban Development's (HUD) Community Development Block Grant (CBDG) program, whose objective is to "develop viable communities by providing decent housing, a suitable living environment, and opportunities to expand economic opportunities," with a particular emphasis on lower-income populations (HUD, 2006). Though not fully funded by Congress as of July 2006, the program plans to reimburse owners the full market value of their home, up to \$150,000 (less insurance proceeds and outstanding liens) for qualified repair costs, or to purchase a new home (Louisiana Recovery Authority [LRA], 2006). In the latter case, the state takes title of the damaged house, and pays the owner full pre-storm market value if they remain in-state, or 60% if the owner moves out of state.

Clearly, the program encourages owners to rebuild in place or to remain in-state. Were owners to move out of state, their contributions to the overall economy and tax coffers would be lost indefinitely. Thus from a statewide perspective, good arguments might be made for the program overall, and for the reduced reimbursement for residents that move out of state. Especially considering the program's federal funding, this is a good deal for the state. Nationally, if other states have equivalent access to such funds, or if the nation derives some unique benefit from Louisiana, the same argument may hold. Nevertheless, the program has some interesting implications at the neighborhood level, which is where our interest lies.

By subsidizing rebuilding, the program increases net property values for those who rebuild. This is illustrated in Figure 4.4.1 where the payout for "build" shifts from $V(n)$ to $V(n)'$. This allows a positive payout for "build" where $n_1 \approx 32\%$. Thus a coalition of 32% is now viable, whereas a coalition of roughly 42% was required before. Nevertheless, without a coalition the neighborhood's future remains indeterminate - individual owners still do not have an unconditional preference. Likewise, $V(n)'$ still becomes positive before $V(m)$, indicating the potential for a net social cost.

The buyout provisions similarly do not provide definitive answers. Figure 4.4.1 shows the

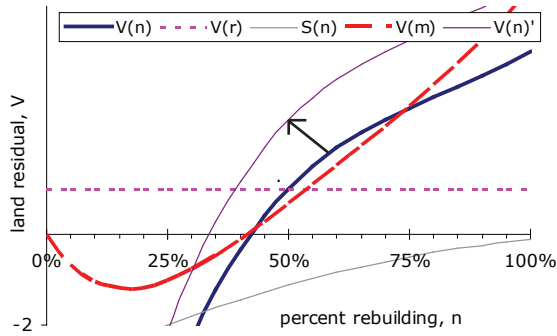


Figure 4.4.1 Subsidy Game (graph form)

	B build	B abandon	B move
A build	7	0	1
A aband.	-1	0	1
A move	-1	0	1

Figure 4.4.2 Subsidy Game (normal form)

individual's relocation value as $V(r)$, a constant value higher than the earlier abandonment value of zero. Giving owners the ability to relocate does not change the dynamics of the coordination problem at all, as Figure 4.4.2 shows. Where owners have the option to build, abandon, or move, the move option will be preferred over abandonment, but neither build nor move becomes a dominant strategy.

One important aspect of the program should be noted: it allows local officials to not provide funds to owners for rebuilding "in areas where a high proportion of homeowners are choosing not to invest" (LRA 2006, p. 6). In such cases, owners would be required to take the buyout and relocate. At first this might appear as a stark (if little publicized) acknowledgement that some neighborhoods may simply not be socially viable. However, a correctly functioning subsidy would control for this. In fact, rather than a subsidy, a tax would be required that moves $V(n)$ in Figure 4.4.1 to the *right* so that it crosses the vertical axis at the same point as $V(m)$.

The reason for this provision limiting funds to buyouts in certain areas relates back to the equity and efficiency principles. It is difficult if not impossible to create a blanket rule which accounts for all possible scenarios. The social (municipal) costs of a given neighborhood size varies widely across municipalities, and even within municipalities. An efficient rule would maximize utility across the state, and would cover only those contingencies which would increase utility, after taking administrative costs into account. An equitable rule however, would work to evenly allocate that utility rather more than maximize it. So Louisiana's program represents a compromise, setting a blanket rule but giving local officials flexibility in its execution. However,

this flexibility comes with the potential for abuse. Where only buyouts are offered, the locality gains control of the property, and what began as a subsidy ends up functioning very much like eminent domain, and very much like the BNOB Commission's minimum threshold proposal which received such a strong popular backlash.

The buyout provision could be an effective means for redistributing the population and restoring owners financially when they are located in a hopeless neighborhood. However, it is subject to most of the same criticisms that were applied to eminent domain in Section 4.3. It ignores owners' subjective value, and the community value of a neighborhood. It largely removes owners' chance for self determination. It puts the government's interest in economic efficiency squarely in opposition with the equity principle, offering localities an incentive to violate property rights for fiscal purposes, and may indiscriminately target lower-income areas. Although a cross subsidy may be effective at reinvigorating neighborhoods, the program described here has several clear drawbacks.

While an ex ante rule might sidestep many equity issues, where regulations are amended or placed upon existing communities, gains and losses are unlikely to be equitably distributed (Barrese, 1983). Likewise, the administrative body stands to gain from regulation, and may be prone to corruption or moral hazard.

4.5 The Case for Intervention

Consistently, there are a few primary rationales for government intervention and control of land use where the public good is at stake. Chief among them are economic inefficiency - when the unencumbered free market fails to allocate scarce resources in a way that maximizes social benefits; and social inequity or unfairness - when public goods (harms) are disproportionately enjoyed (suffered) by some segment of the population. Balancing against these goals are the primacy of individual rights and a long-standing preference for limited government in our society.

Eminent domain showed little promise of meeting these several objectives when applied to a neighborhood rebuilding scenario. Efficiency gains are far from certain, and serious equity concerns are apparent. As a bureaucratically controlled process, it offers little opportunity for community involvement. The subsidy program discussed in 4.4 showed some potential for encouraging investment. The buyout provision could help both owners and municipalities escape from hopeless neighborhoods, but its execution also opens the door to abuse. In both cases, the difference between owners' subjective value and market value is a major source of tension which a command-and-control authority has limited ability to reconcile.

5 Alternatives

Of the several methods for bringing about agglomeration presented earlier, none had clear advantages over the others. Each involved a central authority exhibiting direct control over the process, and all made trade-offs between efficiency and equity. Rather than settling for one or another of those solutions, the following discussion reexamines the assumptions that intervention was predicated upon. The argument in favor of government intervention assumed that the coordination of external effects among neighbors was unlikely to occur, and that absent coordination an inefficient population distribution might result. Direct control lies at one end of a continuum of methods for handling externalities that (in decreasing order of severity) includes penalty systems, enforceable private contracts, and social norms (Ellickson, 1973; Dixit & Skeath, 2004). The following sections consider solutions that lie further to the right of that spectrum.

Broadly speaking, two classes of coordination regimes exist: those which are established in anticipation of a given event or series of events, and those which come about after the fact. A bright line does not exist between these classes, and certainly those solutions which are applied before the fact must also be judged for their performance afterwards. Condominiums fall relatively neatly into the first category, and usefully relate to the present subject. Section 5.1 focuses on condominium ownership systems, and mentions other systems devised to collectively manage shared interests. Few examples of ex post coordination frameworks directly apply to our case, but Section 5.2 reviews several recent proposals for neighborhood development organization. Section 5.3 draws out a number of principles from these examples, and proposes a new framework to guide a locally driven rebuilding effort.

5.1 Ex ante

One point was left out of the previous discussion on eminent domain because it is fairly obvious and somewhat secondary to the issues considered there: that the mere expectation or anticipation of eminent domain could reduce property values. That one might be summarily removed from one's home with little recourse is clearly a limitation on property rights which one would expect to diminish that property's value. Paradoxically, with other such limitations this is not always the case. Several empirical studies have found that zoning and private covenant restrictiveness is positively and significantly correlated with sales prices (Pollakowski & Wachter, 1990; Miller, Schill, & Voicu, 2004). The logic behind this is not new - zoning and comparable private covenants operate by creating a set of rules that restrict owners' freedom of use of their property, in order to limit negative externalities and foster positive ones among neighboring properties.

Importantly, in private settings such as condominiums or cooperatives, these covenants, conditions, and restrictions (CCR) are agreed to voluntarily, presumably in recognition that they increase personal utility if not property values. That a developer or other sponsor is typically responsible for crafting the CCR's may diminish slightly the argument that these are organically evolved governance systems rather than fully formed structures applied by a central authority. Nevertheless, they allow property investors wider latitude in choosing, and arguably greater individual input into the management of the shared goods that make up the community. Several arguments can be made in favor of wider employment of private collective ownership (e.g. Nelson, 2004), and cautioning against it on both efficiency grounds (Langbein & Spotswood-Bright, 2004) and over equity concerns (Strahilevitz, 2005). While not a panacea for collective action dilemmas, common interest communities do offer valuable insight into crafting effective governance structures to internalize and control what would otherwise be external effects.

In a typical condominium building, unit ownership is defined by co-adjacent volumes of space. Unit owners are obviously mutually dependant on the physical support which makes those

spaces usable and accessible. State enabling legislation and condominium bylaws generally have provisions for contingencies that include destruction and obsolescence of the building structure. Typical provisions require repair where damage is less than some fraction of the property value, and require partitioning (i.e. sale) where damage is greater (Rohan, 1965). In both cases, unanimous (or often super-majority) consent may over-ride the default rules. These provisions aim to protect both minority and majority unit owners from actions which would unduly commit them to high costs or limit the liquidity of their equity.

Japanese condominium law has much more elaborate provisions, including call and put options that further protect owners. The put may be exercised by a minority owner in case a majority decision to rebuild is made; while calls may be exercised by any owner when the property's disposition has not been agreed to, once a specified time has elapsed after the building's demise (Morris & West, 2003). Not only do these provisions protect both individual and collective interests in the property, they also create boundaries within which a collective process can unfold. Also, the call option gives parties a strong incentive to reach timely resolution.

Another useful example of collective management of shared interests comes from micro-finance group lending, where borrowers are collectively responsible for managing or guaranteeing loan funds. Where a group of peers is mutually responsible and individual outcomes are inter-dependent, members' interests may naturally come into alignment. Group lending reduces information asymmetries and adverse selection, and can be an important means for growing institutional capacity (Morduch, 1999). Micro-finance organizations show lower cost and risk profiles where group lending is used as compared to traditional lending practices (Morduch, 1998). By localizing the external effects of credit loss, group lending better manages them than traditional financial institutions which rely on formulaic tests to rate credit risks.

These examples diverge from our case in that their governance structures are established in advance of the shared interests. Likewise, they benefit from the positively reinforcing effects of repeat interaction, and greater homogeneity stemming from self selection. Nevertheless, they

show the benefits of flexible but robust governance systems and the value of local information. Where parties have mutual interests and groups can be efficiently sized, local control may be the most effective means of maintaining individual choice and equitable arrangements, without grossly sacrificing efficiency.

While the difference between these examples of collective governance and other cases where a framework is applied externally may seem slight, there are important distinctions. Locally established systems based on voluntary association not only allow for closer tailoring of provisions to meet unique local conditions, they also benefit from a stronger personal investment in both process and outcome by those parties best equipped to influence them.

5.2 Ex Post

Common wisdom has it that where property interests are concerned, breaking up is easy but coming together is much harder to do. In our abstract neighborhood model, owners have a collective interest but no formal mechanism for advancing that interest and balancing it against those of individuals. Legal institutions have arisen to handle such cases, in diverse areas including bankruptcy, corporate takeovers, and oil and natural gas extraction (e.g. Liebecap & Wiggins, 1985). The commonality among these, and their relevance to the current study is that they have an established framework for managing holdouts without destroying the individual's rights and interests.

The last several years have seen a number of proposals to move away from traditional government control of urban redevelopment and management toward local governance^{*}. Dissatisfaction with current land tenure arrangements has led to Michael Heller and Roderick Hills' proposed Land Assembly District (LAD) (2004). The proposal blends historically public and

* See eg. Nelson (1999), proposing a super-powered form of Residential Community Association which would have zoning and redevelopment authority; Ellickson (1998), proposing a residential form of Business Improvement Districts.

private roles and governance systems into a hybrid structure designed to allow market forces to bring property into its highest and best use while retaining the democratic principles of majority rule. The LAD allows property owners to vote whether to accept what essentially would be a takeover bid by a developer. This elegant solution restores much of the decision power to the residents that is notably absent from eminent domain proceedings. Also, through competition between neighborhoods for development activity, and competition between developers for property, it promises some diminution of rent-seeking by both groups. However, as proposed it does not eliminate the potential for holdouts, and so maintains condemnation as a last resort.

One process used in several nations for urban redevelopment might also be seen as “third way” between unencumbered markets and the command-and-control governmental solution. Land pooling (alternately “land readjustment”) involves a state-legitimized mechanism where existing property owners, a developer, and local authorities achieve a collaborative and mutually beneficial solution to a land assembly problem (Connellan, 2002). In Japan, the system is based on a loosely framed process where an owner/developer promotes a project and must gain concurrence from the local authority and from a majority of affected landowners. Owners may either contribute their land for a stake in the joint venture, or sell out directly to it. Landowners who do not voluntarily join the coalition can be compelled to participate only if a negotiated agreement is not reached. In that case, all landowners are treated equitably, according to a transparent formula established by the authority.

Each of these frameworks is potentially advantageous for a few reasons: Projects must have broad support from each of the stakeholder groups before going forward, which grounds the process in a collaborative setting. The government role is primarily limited to that of facilitator, but has the threat of enforced resolution to encourage private agreement. Market forces will tend to make projects much closer to ‘right sized,’ and thus minimize externalities, and minority holdouts cannot scuttle the project.

Both of these formats seek to provide some predictability and efficiency to the assembly

process while broadly retaining property owner rights. They provide keen insight into the relevant issues, and offer creative means of confronting the substantial challenges of devising a fair and effective solution. While neither entirely divorces itself from government mechanisms, both are grounded in community support and involvement, and recognize owners' unique position to devise solutions that meet their individual and collective interests.

5.3 Commitment Game

Each of the mechanisms described above differ from both enforced privatization and regulatory control, in that their processes are driven from the ground up rather than from the top down. They take advantage of the unique information and interests of the participants in crafting a shared solution. While not a blanket solution to common resource problems, collective action frameworks may allow greater flexibility and recognition of individual property rights while keeping transaction costs relatively low. This section considers how such a framework might be applied to the neighborhood rebuilding challenge.

There were two conditions underlying the abstract model in Chapter 2 which described the decision paths and potential outcomes for owners faced with the question of whether to rebuild: the model did not have any endogenous enforcement mechanisms, and was a simultaneous play single-round game. As suggested by the examples above, modifying either of those conditions can change the potential outcomes significantly. The focus here is on the first condition - enforcement.

An enforcement mechanism in the game model might operate quite similarly to the subsidy program described in Section 4.4. The subsidy operated by increasing the payout for all parties who rebuilt, and had the effect of making a smaller coalition viable than would otherwise be possible. Where a greater number of parties choose to rebuild, the subsidy is irrelevant to the general outcome (though perhaps important from an equity standpoint that it be applied uni-

	B build	B move
A build	7	1
A move	-1	1

Figure 5.3.1 Subsidy Game

	B build	B move
A build	7	-1
A move	3	1

Figure 5.3.2 Contract Game

formly). Indeed, a subsidy tends to cloud the real issue - that the more parties rebuilt, the better off they would be, and the more others would want to rebuild. While this may sound rather like a pyramid scheme, there is of course a down-side if the neighborhood does not reach critical mass.

Hardin succinctly identifies the dynamic required of an effective solution: “mutual coercion, mutually agreed to” (1968, p. 1247). Leaving aside momentarily the difficulty of coming to agreement, consider the sort of coercion that is required. The peculiarity of the assurance game is that the parties’ reluctance to act is primarily rooted in motives of self-preservation, not other-exploitation. Where A, B, and C stand to gain in the future from each other’s rebuilding, they would conceivably be willing to each pledge payment to one another for actually rebuilding. So contracts might be signed among the parties, such that if A and B rebuild but C does not, A and B would receive payment from C but not vice versa. Where all rebuild, the payments would cancel out. Alternatively, a device similar to a construction bond could be used, with each party pledging the other a sum certain if they fail to rebuild. The difference is slight, and the net outcome is the same: in the first case the pledge is an incentive for building, while the second serves to penalize not building. Figure 5.3.1 repeats the “subsidy game” payouts for rebuilding or taking the state buyout described in Section 4.4, which remains an assurance game. Figure 5.3.2 shows the effect that a correctly priced contract would have, transferring 2 from the abandoner to the rebuilder. Notably, the cooperative payouts do not change, only those where parties choose different courses of action. Whereas before, the payout for (move, build) was (1,-1), the contract results in payouts of (-1,3). Holding the other party’s action constant, building always results in a higher payout

than moving: where B chooses build, A nets 7 for build or -1 for move; where B chooses move, A nets 3 for build or 1 for move. Thus owners would always prefer to build *independent* of the other party's action.

While the contract's outcomes give the needed price incentives, the problem remains that owners would be disinclined to sign the contract unless they already planned to rebuild. Likewise, enforcement could prove quite difficult. This arrangement comes close to a solution, but may not give owners ample incentive to join the contract, and enforcement remains a challenge.

An alternative is possible, that leverages off of the subsidy program discussed in Section 4.4. It holds generally that pre-storm market values are substantially higher than post-storm market values in severely damaged sections of the city (Miestchovich, 2006). It also holds that if an owner were to take the state buyout at pre-storm market value *before* the neighborhood is largely rebuilt, their subjective value of rebuilding *without their neighbors* is necessarily lower than that pre-storm market value. Thus the buyout amount represents a likely reservation value for those who are disinclined to rebuild unless their neighbors do. So rather than take the buyout, owners could pledge their property title (and subsidy proceeds, which are transferable) to a flexible fund structure referred to hereinafter as a Commitment Partnership (CP). The CP might be sponsored by a local nonprofit group such as a Community Development Center (CDC) or other (preferably pre-existing) community organization. In pledging their title, owners would state the minimum percentage of rebuilders/agglomeration necessary for them to want to rebuild. If that percentage is not reached within a specified time, owners would receive the buyout value, and the CDC could either transfer the property to the state or redevelop the property itself. If the percentage is reached, the CDC acts as an escrow agent, and receives and administers state rebuilding funds.* This would have the effect of locking participating owners into a common action. The results

* Escrow accounts are in fact a requirement of the state program (LRA, 2006). Details on their administration have not been established, but the purpose is to ensure that state funds are in fact used for rebuilding.

	B build	B move
A build	7	X -1
A move	X -1	1

Figure 5.3.3 Commitment Partnership (normal form)

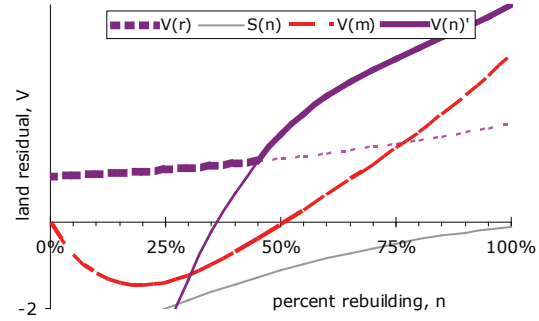


Figure 5.3.4 Commitment Partnership (graph form)

are diagrammed in Figures 5.3.3 and 5.4.4. In 5.3.3, the payouts of the subsidy game at 5.3.1 are repeated for the coordinated solutions (build-build, and move-move), but the CP ensures that participants will not arrive at the non-coordinated outcomes. Likewise, Figure 5.3.4 shows the same curves as the subsidy game at Figure 4.4.1, and indicates the effect of the commitment solution with thickened lines - such that where n is large, parties “automatically” choose n , rebuild; and where n is small, parties “automatically” choose r , relocate.

This fairly simple device alters the dynamics of the coordination problem in several ways. Importantly, it separates those who for whatever reasons might choose unconditionally to relocate from those whose decisions are contingent on others’ decisions. In doing so the CP allows owners to make their action contingent on others’ actions *without* creating delays. Otherwise, it would be quite possible for a neighborhood to appear hopeless, while in fact owners would prefer to invest but are struggling with the dilemma posed by the assurance game.

Owners have a strong incentive to join the CP, in that it mitigates risk by allowing investments to be made only when the desired level of agglomeration is reached (through other’s concurrent commitment or investment). In this respect, the CP framework acts as an information exchange, announcing parties’ intentions to the group, and enforcing their follow-through. There is little if any incentive for owners to strategically over- or under-state their minimum acceptable level of agglomeration, as the cash reservation value remains unchanged, and there is no surplus to be divided among the multiple owners. Indeed, where owners’ decisions are based on owners’ subjective valuations, and where they individually retain any surplus from rebuilding,

the program avoids the pernicious distributive issues that attend land assembly. Likewise, voluntary accession ensures eminent domain's greatest weakness is not repeated.

The CP can also facilitate relocations either within or between neighborhoods, to support greater agglomeration, and in response to individual needs. The pooled resources and the CP's nonprofit charter would enable property swaps and multi-party transfers at lower transaction costs than in the open market. Depending on individual interest, the CP could also engage in activities similar to the land pooling, as discussed in Section 5.2.

One area of concern that was raised previously is not explicitly addressed by the CP, though the framework does offer a potential solution. The graph at Figure 5.3.4 indicates that a given population level may be individually profitable for owners, while remaining socially costly for the larger municipality. Where this is the case, the CP or other development groups might be engaged by the municipality to redevelop those properties necessary to generate net social benefits. New Orleans has announced the planned demolition of several large public housing projects (Filosa, 2006). By replacing these isolated projects with scattered site development in areas with low returning populations, both individual and municipal values can be maintained, without sacrificing individual property rights.

The solution crafted here takes advantage of some unique aspects of New Orleans' current condition, such as the state subsidy program. Nevertheless, it remains firmly rooted in the universal principles of self-determination, property rights, and equity. While a situation such as that in New Orleans may seem so desperate that a strong centralized response is required, a careful reading of the dynamics and interests involved suggests that alternatives are available which empower affected parties to effectively make decisions in their individual and collective best interests.

6 Summary

To review the problem stated at the beginning, an assumption was made that a neighborhood would be profitable if at least some minimum percentage of its former capacity were rebuilt. The minimum threshold is a function of both externalities and fixed costs/economies of scale, and can be likened to a critical mass - a point above which sustained reinvestment would occur.

Private developer assembly was suggested as one potential solution, where the requisite number of properties would be brought under the ownership control of one party. Several potential difficulties with assembly were raised - a necessarily long time horizon or high land costs would minimize gains, and limit developer interest in pursuing assembly. Strategic behavior could likewise increase costs or time, and may result in insufficient assembly size. Finally, private assembly fails to engage the neighborhood residents, and to that extent it limits residents' ability to recapture the intangible value of their involvement and "ownership" of the community.

Eminent domain was presented as an alternative to private assembly. While solving the holdout problem, it did so to the detriment of property rights. Moral hazard also was raised as a potential issue - that the bureaucracy or political elite may act not as faithful agents of their constituency, but with an eye to their own self-preservation or betterment. In that respect, eminent domain has little to recommend it over private assembly as it remains an opaque process controlled from the top down, where community involvement is often limited to owners fighting to retain their property.

An incentive scheme was considered as another alternative. As a blanket provision that gave equal access to funds, it appeared equitable and low in transaction costs. However, by not taking differences in individual needs into account, the program suffered on efficiency grounds and some measures of equity. Likewise, loopholes designed to encourage more efficient outcomes at the local level also allowed for inequitable treatment.

Each of these potential solutions ignores the basic dynamic at work - that owners will

likely desire to rebuild if they can coordinate their actions. Furthermore, they tend to exacerbate the tension that lies between market value and owners' subjective value, and in the unequal information about those subjective values. In assembly, this increment leads to under-assembly, while with eminent domain it is often perceived to result in under-compensation. Neighborhood-level organization avoids these traps by enabling decision-making at the level of individuals, where that subjective value is determined.

A neighborhood organization can easily be established to overcome the difficulties of coordination, allowing owners to mutually commit to rebuilding only where certain jointly determined conditions are met. By also committing to sell when rebuilding is not in their interest, an enforcement mechanism is established and the coordination challenge is largely overcome. This solution is equitable in that it allows owners to determine under what conditions they will rebuild, and does not redistribute property rights. It derives efficiency from encouraging coordinated, agglomerated investment, and by discouraging isolated investment. Likewise, it enables a flexible means of property swapping and assembly without high transaction costs. As a locally driven process, neighborhood organization is by nature more inclusive and transparent than centralized solutions, and may be successful not only at rebuilding housing but also communities.

6.1 Further Study

With the billions of dollars that will be spent on New Orleans' redevelopment and on future disaster recovery efforts, and considering the thousands whose livelihoods are directly affected, a better understanding of how to engender timely and efficient coordinated post-disaster redevelopment is essential. Limited reviews of the rebuilding efforts after the Kobe and Northridge earthquakes of the 1990's (Morris & West, 2003) shed some light on the effectiveness of condominium associations in making rebuilding decisions. Katrina will provide an excellent opportunity to expand on this research. Preliminary data suggest that pre-existing organizations

have been instrumental in spurring rebuilding in post-Katrina New Orleans, while areas without such organization already in place have been languishing.* A comparative assessment of rebuilding speed and decision processes for neighborhoods with and without homeowners associations would be one way to gauge the effectiveness of local organization, and could shed further light on the advantages and drawbacks of existing organizational structures where homeowners are faced with rebuilding decisions.

* A limited comparative review of neighborhood-level property damage (HUD, 2006), building permit applications (City of New Orleans, 2006a), and sales transactions (Miestchovich, 2006) was conducted in concert with this research. Although definitive results were not obtained, community organization appeared to be a relevant factor in the rate and degree of rebuilding by neighborhood. These tentative results also correspond to several field observations (Rivlin 2006; Chen 2006; Hauser 2005).

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