the economic development-

URBAN DESIGN LINK IN BROWNFIELD REDEVELOPMENT

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Photo credit: Brian Leary

Aerial view of the former Atlantic Steel Company foundry and rolling mills in central Atlanta, now the site of Atlantic Station.

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INTRODUCTION

The wave of deindustrialization over the past several decades has contributed substantially to the 450,000 brownfields that are estimated to exist nationwide.

Brownfield sites manifest themselves in a wide range of sizes, locations, contexts, and environmental states. Although they can have commercial as well as industrial former uses, the largest have industrial pasts.

In one sense, the U.S. created the brownfield redevelopment problem when it passed the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Its initial intent was to promote clean up of contaminated land, and to provide opportunities for the U.S. Environmental Protection Agency to recover clean up costs from all potentially responsible parties (PRPs), but fear of being assigned liability as a PRP had the unintended consequence of significantly reducing interest in redeveloping brownfields.

The few who chose to accept the risks focused the majority of their resources and energy on environmental remediation. New development began only after extensive cleanup processes were complete. From start to finish, brownfield redevelopment was a complex, time-consuming process, involving numerous stakeholders and very large capital investments from a variety of sources. These facts combined to constrain redevelopment solutions to principles of cost effective site engineering along with the standard private development process that is driven by market demand and conventional financing packages. The ultimate impact is that brownfield redevelopment has cemented itself as a real estate – rather than an economic development – concept, particularly for large sites. Consequently, the physical design and planning for these brownfield projects are tied closely to short term market projections, and the opportunity to create a platform for sustainable economic development has been missed.

States and localities, particularly those in the "Rustbelt", were leaders in seeking means to overcome CERCLA's unintended consequences. Regaining lost jobs, stimulating new businesses, and increasing tax revenues became top priorities and guided public sector support in the brownfield redevelopment process. In the case of smaller cities that depended on a single major manufacturer for sustenance of the local economy and whose identities were defined by its presence, the wounds creat-

LEARNING FROM ATLANTIC STATION

Today, large brownfield sites are valued real estate development opportunities for high density, commercial, and housing mixed-use projects. In the past, they were typically stand-alone industrial sites. Recent redevelopment efforts suggest they continue to be perceived as stand-alone sites even though they may be occupied by a variety of business, residential, and public uses. However, redesigning and redeveloping large brownfield sites so that they become part of the surrounding city and neighborhoods is key to gaining approvals from a myriad of local, regional and national stakeholders, and making lasting and maximum contributions to the local economy. This article discusses the critical role of urban design for maximizing the economic development benefits of brownfield redevelopment, illustrated through a case study of Atlanta's Atlantic Station.

ed by deindustrialization ran particularly deep. Larger cities with more resilient and diversified economies, often faced the problem of large abandoned sites threatening negative impacts on the surroundings and on city or even regional economic development marketing. The result was an inevitable urge to move quickly, identifying immediate or short-term uses. Capturing perceived markets quickly led the public sector to get involved in the redevelopment process. Brownfield redevelopment became synonymous with local economic development but little attention, if any, was given to the physical design, planning, and reintegration of these sites with the surrounding locality.

The U.S. EPA's 1995 Brownfield Action Agenda was a specific response to help promote economic development that fostered a sophisticated brownfield industry which includes specializations in environmental consulting, finance and investment, law, insurance, research and development of new remediation technologies, real estate, engineering, and remediation. Consequently, developer attitudes toward brownfield redevelopment have shifted, reinforced by the emerging trend in the reoccupation of central cities throughout the nation and increasing availability of financial incentives from various government agencies.

In some cases, financial incentives have even succeeded in making redevelopment of urban brownfield sites even more lucrative than pursuing new development on suburban, greenfield land. For example, Atlantic Station utilized a variety of sources including its tax allocation (also known as tax increment finance) district status to fund environmental remediation and general improvements of the site. This substantially reduced the overall cost of the property compared with similar "uncontaminated" property in the area (Berger, 2006, p. 207). The redevelopment of the former Atlantic Steel mill site in Midtown Atlanta is heralded for its leadership in refocusing growth and development back towards the inner city and away from the region's sprawling suburbs (Dunham-Jones, 2005, p.61). But Atlantic Station is not without fault. Though the project is often touted as a brownfield model for Smart Growth, its conventional approach may limit its contribution to brownfield redevelopment lessons. (Dagenhart, Leigh and Skach 2006, Miller, 2006).

While there have been a number of private and public sector innovations created to overcome market failures and enable brownfield redevelopment, there has been little accompanying innovation in the typical brownfield redevelopment process. This has the potential to short-change the economic development benefits to both the private and public sectors from the extraordinary levels of effort that have been undertaken to create a functioning brownfield redevelopment market.

In this article, we argue for a re-examination of the brownfield redevelopment process to focus on sustainable development that integrates economic development and urban design. We first consider the conventional brownfield redevelopment process, suggesting five guiding principles. Then we relate the story of Atlantic Station, suggesting lessons that can be learned from a project that was expected to integrate itself into the larger process of city design and economic development.

THE BROWNFIELD REDEVELOPMENT PROCESS

Four major steps are commonly associated with the brownfield redevelopment process – pre-development, securing the deal, cleanup and development, and property management. Each is a response to perceived redevelopment challenges of environmental liability, financial barriers, cleanup considerations, and reuse planning (*Anatomy of Brownfields Redevelopment*, US EPA 2006).

The first step, pre-development, involves a range of activities including: determining a new use or idea for the site, studying financial feasibility, analyzing environmental contamination, obtaining property access, and identifying sources of funding. Inception of a governing redevelopment idea typically begins here with a highest and best use analysis of the property. Consultation with all stakeholders, including the local community should occur (but often does not) during this first step.

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Once redevelopment use for the site has been established, it usually ends up driving the remainder of the process. A pro forma and environmental analysis are developed to study the financial feasibility of the project, based on the projected use, and to determine the extent of cleanup, again associated with the pre-determined use. After these basic first project parameters have been established, the remaining steps in the process are relatively straightforward: secure funding sources, obtain property rights, prepare architectural design, and acquire necessary approvals and permits. These steps follow the traditional real estate development process, with the exception of the development of a site remediation plan which coordinates cleanup activities with new construction so that both may be completed as quickly as possible. In concept, the process is simple and effective in creating new uses

for the site. However, the process can easily become internally focused, losing sight of the brownfield's surrounding urban context and future changing conditions, as we illustrate in our Atlantic Station case study. As a result, significant economic development benefits may be lost.

Unforeseen issues surrounding environmental cleanup, funding commitments, project marketing, and even public resistance may result in several adjustments during the remaining course of the process, but, they rarely change the original redevelopment. In some cases, such a rigid development concept and process can create irreconcilable problems that will ultimately cause the entire project to collapse. For example, in the case of the brownfields site of the Sleepy Hollow automotive plant in Westchester, NY, General Motors with developer Roseland Properties, attempted to transform a 97-acre site located along the banks of the Hudson River into a mixed-use village dubbed "Lighthouse Landing" in compliance with local laws and plans. However, differing views and values surrounding the project's proposed building density, village connectivity, public spaces, and environmental remediation ultimately kept Lighthouse Landing from ever proceeding past the drawing board. Though Roseland Properties spent over six years battling these issues at both local and regional levels, the developer ultimately withdrew from the project when it became apparent that scaling back the plan any further would make the project unfeasible (Bacon 2008).

The deindustrialization that brownfield redevelopment responds to must be understood as an ongoing, indeterminate process rather than a specific period with a discernable end point. In almost all cases, reconstruction of underutilized land eventually occurs. Consequently, acknowledging and preserving the original urban design patterns of the setting in which the cycle of economic change takes place is critical for mitigating future economic losses, and maximizing the public and private benefits of reinvestment. In the economic development field, this process is well known as "creative destruction," a phrase coined by Joseph Schumpeter in the 1930s. As an illustration, Atlanta recently witnessed simultaneous auto plant closings in nearby Hapeville and Doraville; yet new plants within the state promise to take their place. South Korean-based Kia Motors Corporation has constructed a new facility in West Point, Georgia, while German-based Volkswagen AG is contemplating construction of a new plant on a 1,500-acre site near Savannah (Chapman, 2008).

In an unpredictable manner, the arrival of these plants will transform all aspects of the cities they inhabit, but one day these plants too will close. Someday these cities will also be forced to respond to the very same set of circumstances being experienced by the numerous cities affected by the recent Ford and GM plant closings today.

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URBAN DESIGN AND ECONOMIC DEVELOPMENT

Urban design gives three dimensional form to area and project plans, focusing on building design guidelines and the public realm – open space, sidewalks, streets, and spaces between buildings.

The key to rethinking brownfield redevelopment is not eliminating uncertainty over development trends – an impossible task – but rather accepting that it exists and devising potential strategies that both guide and adapt development to whatever the future holds. Urban design must focus its energies on constructing frameworks that strategically accommodate development in this manner. In parallel, economic development strategies must expand their scope from short term to long, from market-driven strategies to integrated and self-renewing processes of investment, job, and business creation. Both urban design and economic development must reflect the idea that use is temporary and change is inevitable. Brownfield sites are not to simply be redeveloped for a new use, but rather reintegrated into a larger set of ongoing processes.

Urban design is inclusive in practice, and rightly so, because it must weave together physical design ideas, real estate development strategies, conformance to local development regulations along with multi-layered clients and approval processes. Long an important discipline in historic urban cores, urban design has emerged in a primary role in sub-

urban growth management and suburban retrofits. Land subdivision patterns should be understood as the most permanent aspect of the city. Buildings and especially land uses are temporary when compared to the durability of land subdivision. That is the reason that suburban growth management and urban design strategies focus more and more on a structure of small blocks and streets, instead of superblocks, cul de sacs, and gated enclaves of housing, offices, or industry. The same focus is especially relevant for suburban retrofits where land subdivided for one purpose is now obsolete. This is similar to most brownfield sites, which were originally organized for industry. Now their uses are changing again. The question for urban design, therefore, is how to re-organize brownfield sites to both guide and adapt to whatever the future holds.

Urban design is concerned with urban processes, instead of fixed end states, just like economic development. We have identified five key principles for weaving urban design and economic development for brownfield redevelopment: incremental development, organization of territory, layering of infrastructure, definition of boundaries, and creation of public space are described briefly below.

Incremental Development – Not Master Plans

The first principle, incremental development, maintains that design should reflect the uncertainty of the future. More fundamentally, urban development is understood as an ongoing process that has no determinant end form, and requires a strategic framework that allows the city and its neighborhoods to continually reinvent and reconstruct themselves while providing an organizing structure for growth. Instead of attempting to control a master planned outcome, urban design should remain flexible, adaptable, and indeterminate such that a wide range of future development scenarios, foreseen or unforeseen, can be accommodated. This is the opposite of the conventional brownfield redevelopment processes.

Organization of Territory – Not Land Use

While incremental development establishes a critical strategy for urban design, the second principle – organization of territory – directly informs the staging of incremental development. How a site is organized internally influences how and where development occurs. Thus territory should be organized in a way that specific uses and programs are allowed to change without altering the underlying ordering strategy. The traditional lot, street, and block arrangements found in cities across the world are organizations of territory that have proven to accommodate change over centuries. Large single use parcels, whether brownfield or suburban superblocks, do not have that capacity to easily change. Instead of letting market analysis, which by definition is always short term, determine how territory is organized, the territory should be thought of as a part of a city and organized into patterns of lot, street, and block structures that are empirically proven to work. In great cities, land and economic use adapts to urban form and structure, not vice-versa, enabling the continuing changes and processes of economic development.

Layering of Infrastructure – Not Isolated Systems

How a territory is internally organized brings into discussion the third principle: layering of infrastructure. The traditional street grid has provided efficient organization of territory, accessibility, and mobility. However, widespread acceptance and use of a hierarchal street system – arterials, collectors, and distributors – has shifted the focus more towards mobility almost to the point where any other design element has disappeared. Historically, streets have not only provided for vehicular movement, but they have shaped public space, encouraged economic development, incorporated the needs of transit and pedestrians, and connected to other urban infrastructure systems like water management and power distribution (Jacobs 2003, Mossop 2006).

The permanent nature of infrastructure necessitates that it reclaim its traditional ability to function as a critical organizing element, serving as the skeleton for a given site or larger territory. This is particularly important since one of the main forms of economic development incentives is to fund infrastructure improvements. Infrastructure outlasts land uses and should be designed as such.

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Definition of Boundaries – Not Construction of Barriers and Buffers

Definition of boundaries, the fourth principle, underlies both the principles of organization and infrastructure and focuses on how brownfield sites are physically connected or bound to their surrounding context. One aspect of binding a site to its context is physical connections – extending streets to connect in as many places as possible with the surroundings. But it is also about economic connections – the economic processes on one site are bound to others. Some of these may be digital where distance does not matter, but many are physical.

Just as walking distance makes a difference between housing and retail, proximity is also important for business, manufacturing, and other uses. In fact, proximity makes many 'green' processes possible, which is fundamental to brownfield redevelopments. This is the opposite of conventional, especially suburban, real estate development practices, which are based on separating residential from office and retail uses with buffers and barriers that destroy community connectivity.

Creation of Public Space – Not Privatizing Space

The last principle, creation of public space, deals with physical design and the redevelopment process itself. As design, the principle of creating public space serves as an extension of the boundary, infrastructure, and organization conditions by designating locations for key public parks and programs. However, as process, creation of public space implicates public involvement in making spatial choices beyond the standard practice of reviewing and approving completed plans for redevelopment. True creation of public space validates surrounding communities, attracts users, and catalyzes development (Frenchman, 2004). Of course, it also strengthens economic development processes. In other words, public space "fertilizes" the economy.

In the next section, we examine how our case study satisfies the five key principles for weaving urban design and economic development for brownfield redevelopment.

ATLANTIC STATION, ATLANTA, GEORGIA

Atlantic Station is the name used to brand the redevelopment of the 138-acre site of the former Atlantic Steel Company foundry and rolling mills in central Atlanta. As the domestic steel industry collapsed in the 1980's, the plant became obsolete and its proximity to Atlanta's central core guaranteed its redevelopment eventually. With the maturing of the Atlanta Midtown district in the 1990's, the time was right for redevelopment to proceed. In 1996, the complex was sold to a joint venture partnership of Jacoby Development and AIG Global Real Estate.

The development team had ambitious plans for the site, which at buildout was projected to contain 12 million square feet of residential, retail, and office space with a major cultural facility (Table 1). However, formidable financial and environmental challenges mandated public subsidies, and both the city of Atlanta and the US EPA became involved. The promise of 20,000 new jobs and $30 million in annual tax revenue prompted the city to create a TAD (equivalent to a TIF district elsewhere in the country) to issue bonds to cover infrastructure and remediation. At the same time, EPA recognized the potential for improving regional air and water quality with a transit-supportive Smart Growth project, and granted the development Project XL status, allowing the team to override Atlanta's air quality non-compliance Consent Decree to obtain funding for a major interstate bridge. However, both the TAD and Project XL processes were contingent on community involvement and premised on public benefits of Smart Growth design principles such as pedestrian connectivity and mixed-use development.

Since Atlantic Station's substantial completion in 2006, it has been praised as an economic and design success and a case study for large-scale brownfield reclamation. With an investment of more than $2 billion, it is cited as the largest brownfield redevelopment project in the U.S. It has received an EPA Phoenix Award, accolades from unlikely combinations of sources like the Urban Land Institute and the Sierra Club, and national media coverage. It has become the de facto model for industrial redevelopment in Atlanta. Although laudable for its moving a

TABLE 1. Atlantic Station Development as of Spring 2008

Retail

- **Total retail in project:** 1.5 million square feet with 75 retailers
- **Largest retailers –** 226,953 sf Dillard's department store; 366,000 sf IKEA; 150,000 sf Target; 86,989 sf 16-screen Regal Cinema; 30,301 sf Publix grocery

Residential

- **Apartments:** Park District, 231 units ($28 million); Icon, 242 units ($31 million); ATL Lofts, 303 units (above the mall buildings, $71 million); 17th Street Lofts, 156 units (estimated $25 million); Metro, 200 units (estimated $25 million)
- **Student Apartments:** The Flats, 86 units / 281 students ($17 million)
- **Condos:** Art Foundry, 347 units ($48 million); Element, 322 units ($55 million); Twelve, 404 units; The Atlantic, 303 units
- **Townhouses**: Beezer, 56 units
- **Single-Family:** Beezer, 34 attached, 12 detatched

Hotel

- Twelve, 101 rooms

Office

- 171 17th Street (Wachovia) - 22 stories, 510,000 sf (leased up)
- 201 17th Street – 17 stories, 350,000 sf (recently completed)

Figure 1: JDI-AIG First Plan

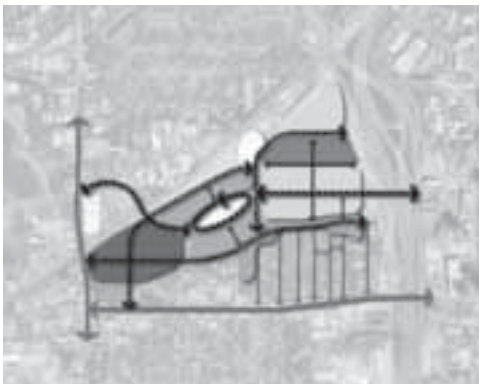

Figure 2: JDI-AIG Second Plan

Figure 3: DPZ Plan

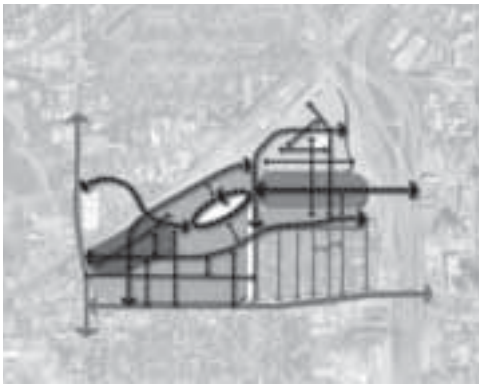

Figure 4: JDI-AIG Final Plan

complex project forward, the design and development process and final master plan of Atlantic Station offers important and cautionary urban design lessons that apply to other large-scale brownfield redevelopments. The process involved the Jacoby Development and AIG (JDI-AIG) original plan, two subsequent revisions, and a final one that was approved for construction with minor changes.

The first JDI-AIG plan (Figure 1) was based on a suburban model of land use compartmentalization that the developer was familiar with from prior projects. The master plan proposed three distinct development areas – a retail mall, a multifamily residential complex, and an office park – separated by landscaped buffers and linked together by a new arterial street crossing the Interstate 75/85 on the east to connect with Midtown Atlanta. Facing criticism from the city of Atlanta and the Midtown Alliance, the team went back to the drawing board attempting to change the project from a typical suburban format to an urban one.

The second JDI-AIG plan (Figure 2) reflected the influence of the city of Atlanta and Midtown Alliance's urban design objectives, and stakeholder voices that became involved in the process through the city's Neighborhood Planning Unit development review framework. Adoption of Smart Growth principles led to the use of higher densities, mixed uses, and increased pedestrian and transit accessibility. Still, although the appearance of the Jacoby plan changed, the initial compartmentalized land uses remained, though diversified by the inclusion of a mixed-use district on the east. Likewise, although the expanded street network attempts to improve connectivity, it is still subservient to development in its hierarchical pattern of main arterial, peripheral access roads, and centralized themed streets. An 8,000-space parking deck was added to cap the eastern portion of the site and support the mixed-use, retail, and office activity.

EPA recognized the need for an independent benchmark against which the Jacoby plan could be measured, and so retained the Smart Growth planning firm of Duany Plater-Zyberk (DPZ) to conduct a public involvement process to develop an alternate master plan. The DPZ plan (Figure 3) abandoned the idea of land use compartmentalization and instead created a street network based on the traditional urban subdivision, continuing the adjacent Home Park neighborhood block format into the Atlantic Steel site. Although DPZ preserved some of the design concepts of the Jacoby plan, its solution is largely non-hierarchical and assumes incremental flexibility in locating land uses. Where the Jacoby plan favors development projects over the public framework of streets, the DPZ plan inverted this arrangement.

The final JDI-AIG plan (Figure 4) shows some incorporation of DPZ ideas but is largely the same diagram as its previous plan. Minor streets have

been added to increase internal and external connectivity, but the fundamental concept of functional street hierarchies supporting discrete land use districts remains. Connections to Home Park are marginally improved, though in practice a combination of medians and one-way restrictions make this very difficult.

In the years since its opening, Atlantic Station has been praised for its real estate development prowess, but criticized for its design shortcomings. Many first-time visitors to the retail district comment on its strong similarity to a traditional mall even though they expected to find a more urban experience. Though they may perceive the problem as a failure of aesthetics, they are in fact responding to the difference between the Jacoby and DPZ teams. The principles discussed here are clear in the DPZ approach and mixed in their use in the Jacoby plan. The Jacoby plan, reflecting its origins and the multiple revisions in the design process, is caught between suburban, short term, land use driven development and a more urban approach organized for changes over time and the weaving of site, community, design, and economic development processes.

Figure 5: Monolithic buildings and sites constrain future incremental development

Figure 6: Parking deck below retail area

INCREMENTAL DEVELOPMENT

Atlantic Station developed quickly, aided by the extraordinary growth of the region and the central city, and the easy access to investment and mortgage funds for the developers, purchasers, and tenants. Additonally, the very large public subsidies for remediation and infrastructure effectively made the land cheap when compared to inner city Atlanta real estate prices. Further, the subsidies enabled the construction of the 8,000-car parking garage in advance of any space for sale or lease, resulting in a fully prepared and "parked" site at a cost below other developable properties in the area. This is an extraordinary bonus for any real estate project, much less a brownfield. Incremental growth and development was not needed in a project that sat outside the normal constraints of real estate and brownfield practice. However, the ability to accommodate incremental growth may be of consequence in the future as the economy slides into a recession, the mortgage and investment problem continues, and Atlanta's growth slows. Atlantic Station has few places that provide a framework for incremental growth, and future redevelopment will by necessity rely on large and heavily-capitalized players to be successful (Figure 5).

ORGANIZATION OF TERRITORY

This principle of design illustrates a major shortcoming in Atlantic Station. Although the project attempts to create a street grid, land uses, and typical buildings footprints, it organizes the site into three parts: a shopping mall on top of a 30-acre parking garage (Figure 6), an apartment development surrounding a 2-acre lake, and an IKEA store.

Essentially, one-third of Atlantic Station depends on the IKEA for its vitality. While the store is the first IKEA in the Southeast and draws customers from far outside the Atlanta region, what happens when the retailer decides to relocate to a new site to expand its business or change its format, as big-box retailers typically do? The present site has been highly customized for IKEA and will require substantial if not wholesale change and reinvestment to redevelop. Had the plan been organized with typical urban blocks, IKEA would have simply conformed to the framework, enabling easy transitions to other buildings and uses in the future. Even if the IKEA building exceeded the dimensions of a single block, it would have been easy to combine blocks knowing that they could be re-subdivided at a later date. Other large-format retailers in the project like Target and Dillards present similar design arrangements; and even some of the housing blocks are so idiosyncratic in shape that efforts to subdivide would result in significant physical constraints.

The evidence from Atlantic Station reinforces the wisdom of traditional urban design practice where a large scale development site is subdivided first – not in isolation, but with knowledge of a number of possible building programs. In this practice, the

structure of lots, blocks, and streets is not determined wholly by land use but instead, governed by an understanding of cities and districts that have proven themselves resilient through endless economic cycles.

LAYERED INFRASTRUCTURE

One of the main forms of economic development incentives is to fund infrastructure improvements. Atlantic Station received $50 million from state and federal funds for the construction of an essential bridge, while another $170 million is being provided in three phases (the last occurs in 2010) through TAD financing. Atlantic Station would not have occurred without these public funding mechanisms, and these mechanisms can be important leverage for achieving layered infrastructure goals. Yet, given the functional hierarchies of the street network and the technical demands of conventional transportation planning, most of the streets in the project cannot fulfill these goals.

17th Street, presumably the most important public thoroughfare in the project, is a suburban parkway in disguise. It is a harsh environment for pedestrians as it bridges the interstate, despite the provision of sculptural sunscreens; it acts primarily as an interchange to funnel vehicles into Midtown (Figure 7). The condition at the west end is similar, with pedestrians subordinate to vehicles particularly in the intersection on the path to IKEA.

BOUNDARIES

Much of the disconnect between context, infrastructure, and development occurs at the project's internal and external boundaries. For example, the final plan fails to link the majority of its streets with the adjacent Home Park neighborhood (Figure 8). Additionally, the project's main north-south street rises to meet the mall and offices on top of the parking garage, creating a serious barrier between the development above and the remaining site at grade. The boundary condition is particularly important on a large brownfield site where its previous access had been highly restricted. It can be a critical influence in shifting perception of the site from one of restriction and isolation to one of access and invitation, thereby extending to the residents in the pre-existing neighborhood the benefits of the large public subsidies which made the project possible.

Figure 8: Partial connections to adjacent neighborhood

Figure 7: Streets designed primarily for vehicular movement

PUBLIC SPACE

Figure 9: Public space bisected and difficult to inhabit

Public space in Atlantic Station does not play a significant role in the development, contrary to the project's marketing materials. The main public square is located in the core of the retail district but because there is no intervening public right of way, it is a defacto front yard for the adjoining restaurants. It is also bisected by a sidewalk accessing an adjacent food court, making its two halves too small a place that is fully inhabited by the public (Figure 9). The other signature open space – Central Park – is primarily a storm water management device. The small lake it contains is fenced, making direct access impossible. Further, the slope from the surrounding streets to the lake is so steep the park is almost entirely unused (Figure 10 on the next page).

Figure 10: Stormwater basin with barrier

INSIGHTS AND ISSUES

It is estimated that Atlantic Station will take 10 years to complete, and many more years to mature and begin the processes of changing tenants, new uses, new buildings, and new designs for streets and open spaces. Thus, definitive conclusions on its ultimate success are premature. Yet, clearly, the conversion of the former Atlantic Steel brownfield site into Atlantic Station is a significant achievement by its developers and greatly benefits the city of Atlanta. However, the extraordinary level of effort required on the part of both the private and public sectors compels critical examination for lessons that can be used in future large scale brownfield redevelopments of the scale and complexity of Atlantic Station. Our examination yields two important lessons.

The first is actually a warning, one especially warranted for the complex undertaking of brownfields. The first diagram developed for a project will resist change, because even if preliminary, it has already had commitments built into it. Thus, from the beginning, the design process must be collaborative and completed without haste. It will change only with colossal effort and, like Atlantic Station, will likely reappear as a major feature at the end of the planning process.

Second, in the maturing practice of large scale brownfield redevelopment, developers have come to expect significant public assistance such as that received by Atlantic Station. But without a commitment to the collaborative planning and design process from the beginning, the extraordinary public assistance for a private development project may not be justified. Further, the potential to be a model urban redevelopment project with positive externalities for the broader community will not be realized.

CONCLUSION: FROM BROWNFIELD SITES TO GREAT CITIES

The re-inhabitation of central cities and public funding of financial incentives have made brownfield redevelopment a far more lucrative opportunity for developers over the past decade. However, the redevelopment process remains virtually unchanged, maintaining a narrow focus on environmental remediation, site engineering, and short-term market demand. Land use drives the entire process. This approach does not recognize larger redevelopment opportunities based on a site's local and regional context. It also fails to provide a foundation for the subsequent rounds of economic development that are inevitable in our long-term process of creative destruction.

Further, despite an increasing amount of public money being used to fund incentives, development continues to overlook potential positive externalities presumably to avert risk and increase feasibility. The fundamental issue is that of uncertainty: conventional brownfield redevelopment attempts to eliminate it, while urbanization thrives upon it. Deindustrialization, as only one process of urban development and a primary producer of brownfield sites, provides an invaluable lesson as to the impermanent nature of use and the inherent flaw in basing development decisions on such a dynamic variable. Urban design and economic development, in response, must accept change and forgo practices that promote static urban forms. Instead, the two must focus their efforts on constructing frameworks that are capable of strategically guiding the development of a site or even a city over prolonged periods of time.

If brownfield redevelopment is instead seen as an urban design and economic development concept based on clear integrative principles, then these sites will have the potential to be transformed from isolated, environmental liabilities into integrated, vibrant amenities and economies that produce great places and, ultimately, great cities. Informed economic developers who use public incentives to strengthen the links between urban design and economic development have a significant role to play in their creation.

Whitman (2006) argues that brownfield redevelopment is ultimately a real estate concept that succeeds or fails, in each case, based on real estate principles (p. 27). If brownfield redevelopment is instead seen as an urban design and economic development concept based on clear integrative principles, then these sites will have the potential to be transformed from isolated, environmental liabilities into integrated, vibrant amenities and economies that produce great places and, ultimately, great cities. Informed economic developers who use public incentives to strengthen the links between urban design and economic development have a significant role to play in their creation.

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