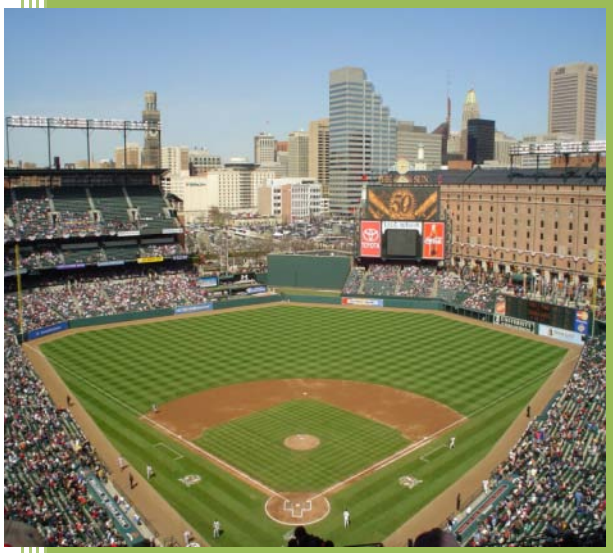
Sustainable Sport Stadiums:
Integrating Development into the City



Images: Top Left - Cowboys Stadium, Top Right - Angel Stadium; Bottom Left -Progressive Field; Bottom Right - Oriole Park. Sources are listed at the end of this document.

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Introduction

Sustainable development addresses the economic, social, and environmental health of cities and regions. Professional sports can have large impacts on these dimensions of the city. Often times, these venues have acted like tumors for the city, sucking up fiscal and environmental resources while causing more problems for the surrounding community (Chapin, 2004). Stadium development has tended to focus on specific sites rather than seeing the stadium as a working organ in a larger body – the neighborhood, the city, and even the region. When cities have seen their sports venues in a larger context, they have been able to identify opportunities that provide for the public good. This paper focuses on strategies to integrate stadium development into the city and their effectiveness in reducing the eco-footprint of sports stadiums, strengthening the local economy, and leveraging opportunities for all those in the community.

As a basis for this study, we have selected four case studies – Dallas, Anaheim, Baltimore, and Cleveland. These cities characterize the current trends for the ways integration is taking place: Dallas is trying to build anew and create an entertainment district; Anaheim is developing around the stadium and intensifying activity in the area; Baltimore expanded an existing downtown; and Cleveland is using the stadium as a catalyst to revitalize the downtown and combat sprawl. Additionally, these cities come from the four characteristic regions of the United States: the South, the West, the Northeast, and the Midwest, each with different types of issues unique to the region. To evaluate how Dallas, Anaheim, Baltimore, and Cleveland address the economy, social equity, and environment, we will apply principles of sustainability learned in class. We will particularly focus on conserving greenfield, infill development, local economic development, affordable housing, and transportation. These case studies provide us with a better understanding for which types of development work or do not work.

Cowboys Stadium – Dallas, TX

Cowboys Stadium, home to NFL's Dallas Cowboys, was completed and ready for use in 2009. This stadium exemplifies the characterization that "everything's bigger in Texas." The stadium alone costs $1.2 billion and uses vast amounts of energy and resources. Monthly utility bills exceed $200,000 per month as the stadium uses 2,036,560 kWh per month or 24,439,918

kWh per year, which is roughly the amount of energy used by the entire city of Santa Monica, CA (pop. 88,000) for the entire year (Glubiak, 2009). While the stadium is disgustingly excessive, the truly lamentable part is that stadium fails to connect with Dallas Metropolitan Area: it does not foster local economic development, transportation, and inclusion of the lower-income sectors of society.

http://www.latimes.com/travel/la-tr-cowboys20-2009sep20-pg,0,5427955.photogallery

Figure 1: Cowboys Stadium is located outside the City of Dallas and is surrounded by surface parking and unusable space.

Cowboys Stadium is located in Arlington, a suburb of Dallas. This contributes to sprawl by diffusing entertainment activity across a larger region (Ewing et al., 2003). The Stadium has also been built on open space which disrupts the native ecosystem (See Figure 1). According to Timothy Beatley, such habitat loss can become the "primary threat to biodiversity" (Beatley, 1994, 146). Because Texas is a state with high-diversity, sprawling-intensive patterns of development like Cowboys Stadium have even worse impacts on the environment as key nutrients are lost and important species become endangered (Beatley, 1994, 146). Developing a local economy also remains a weak component in the integration of Cowboys Stadium.

A strong and diverse local economy is lacking because the surrounding area is just surface parking, sporadic open fields, and highways. Located down the street, the baseball stadium for MLB's Texas Rangers and Six Flags Over Texas Theme Park have the closest resemblance to nearby local businesses. The Dallas Cowboys franchise pitched that their stadium would help create an entertainment district and bolster the local economy (City of Arlington, 2009). This remains to be seen as Cowboys Stadium, Rangers Ballpark, and Six Flags

operate separately from each other and share no connectivity other than a highway. The Stadium cost the City of Arlington tax increases for the public and a $325 million bond but has not been able to yield public goods such as local businesses or housing (Dixon, 2009). This lack of connectivity has translated to transportation too.

The Transportation Plan for the new Dallas Cowboys Stadium emphasizes parking and ease of the automobile. The Dallas Cowboys franchise asserts that they have created a transportation plan "designed to keep the traffic moving [and] make it easy to park" (Cowboys Stadium, 2009). The Stadium has been strategically located off I-30 to ensure that cars from all directions can come to the Stadium. The Transportation Plan includes 15 numbered parking lots that provide approximately 12,000 parking spaces (See Figure 2). They have focused technological advances in creating an online tool that will assign spectators specific parking lots and give them customized directions, which will make getting to the stadium and parking even. This type of transportation plan only increases the dependency on fossil-fuel burning and carbon emitting vehicles. It also limits transportation options, making it nearly impossible to bike, walk, or take any form of public transit which excludes those of lower-income that cannot afford to come by automobile easier. This only increases the reliance on automobiles, adding more VMT, consuming more fossil-fuels, and emitting more carbon.

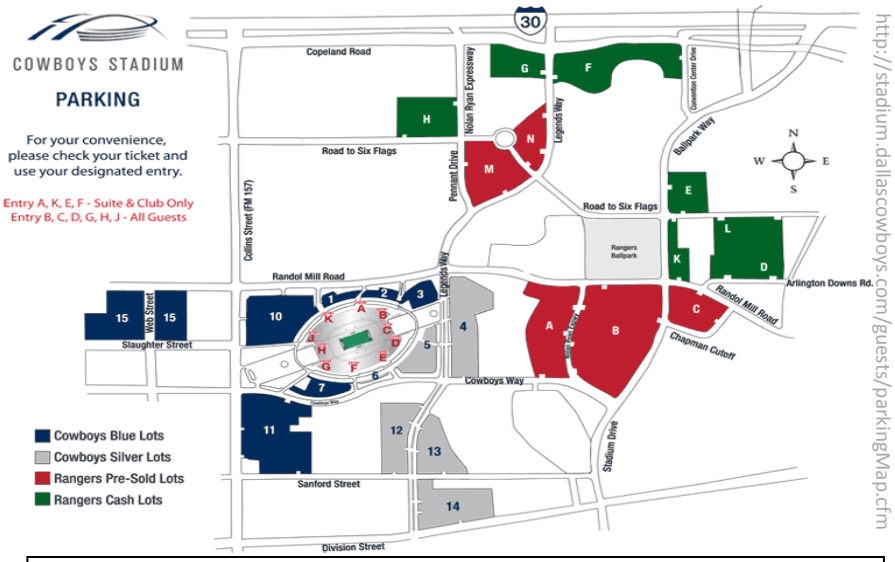

Figure 2: This Parking Plan shows the lack of public transit options and demonstrates the emphasis on the automobile through the wide variety of parking lots. Source:

Much to the dismay of cities, Cowboys Stadium is a growing trend in sports stadium development, especially in the South and the West. University of Phoenix Stadium in Glendale, Arizona is very similar in that it is in the middle of nowhere and also facilitates access

for the car. For just five games a season and a few concerts, these stadiums act as parasites that eat up environmental, economic, and social resources while returning very little back.

The Platinum Triangle – Anaheim, CA

The car-driven culture also dominates the City of Anaheim in Southern California but city officials, developers, and a strong entertainment industry are collaborating to transform the area around Angels Baseball Stadium and Honda Center into a walkable and accessible urban center.

http://www.anaheim.net/departmentfolders/planning/PT/Chapter1.pdf

Figure 3: This aerial photograph shows The Platinum Triangle prior to development. The area was characterized by warehouses and parking lots.

As of Census 2000, Anaheim's population was 328,014, with the highest growth rate (23%) among California's ten largest cities (City of Anaheim, 2002). The vacancy rate for the City is also low at 2.8% which suggests a high housing demand. Instead of trying to build out, Anaheim has focused within and targeted an 820-acre area they renamed "The Platinum Triangle" because it is anchored by three strong franchises: MLB's Angels, NHL's Ducks, and the Anaheim Grove (See Figure 3). Previously, these industries operated as islands similar to Cowboys Stadium; people drove to their destinations, watched a game, and then left. The surrounding area was mostly a grey asphalt dead zone: vacant manufacturing and industrial warehouses and lots of surface parking. Anaheim's City Council

http://www.anaheim.net/departmentfolders/planning/PT/Chapter4Market.pdf

Figure 4: Medium-to-high density housing units and commercial buildings are under construction to create a downtown in Anaheim.

voted to change the zoning for The Platinum Triangle into a Mixed-Use Overlay Zone to allow greater density, making it possible to profitably develop condos, lofts, and office towers. Not only did the City want to attract development, but it had a greater plan to change the culture of the City and the region to position it for a sustainable future (See Figure 4).

By building on land previously occupied by warehouses and surfacing parking, The Platinum Triangle is a form of infill development. Stephen Wheeler asserts that "through infill, communities can increase their housing, jobs, and community amenities without expanding their overall footprint into open space" or "greenfield" land (Wheeler, 2002, 104). Reusing space allows the city to conserve greenfield and open space in the majestic Anaheim Canyons and clean up pollutants from industrial and manufacturing activities. According to the City's Environmental Assessment Report, many sites in The Platinum Triangle must clean the soil, groundwater, and stormwater drainages (LFR Inc., 2009). For instance, some sites were the home to oil drilling companies who had underground storage tanks that held 1,000 gallons of waste oil, 8000 gallons of diesel, 1000 gallons of transmission oil, 2000 gallons of new oil, and 3000 gallons of hydraulic oil (LFR Inc., 2009). Because of such activities, hydrocarbon solvents, waste oil, and mixed oil waste seeped into the soil and groundwater. Old warehouses also had lead paint which is present in the. In order for developers to build, the City said that they would need to remediate and clean these areas to make sites safe and livable (LFR Inc., 2009). Such infill development has accelerated environmental restoration and contaminants clean-up. Additionally, this land did not have any residential developments so

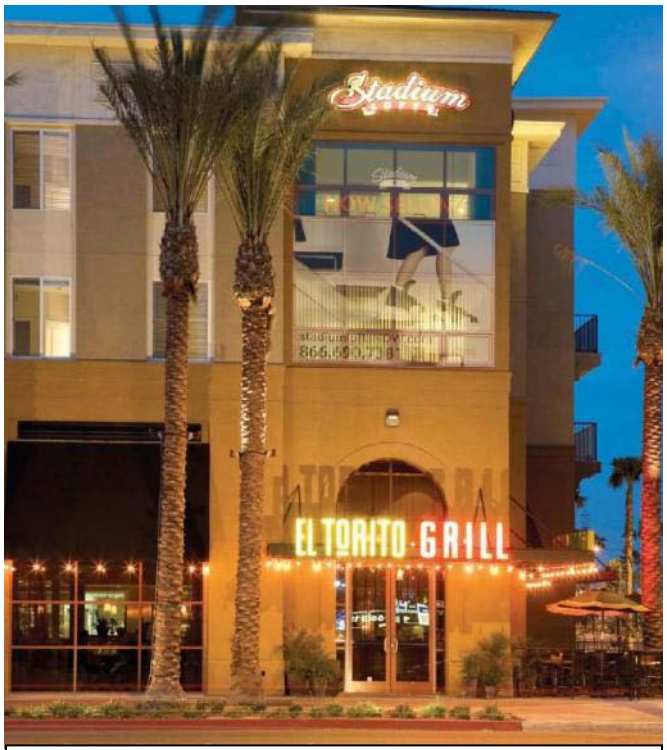

Photo courtesy of Newman Garrison Gilmour + Partners, photographer Steve Hinds

Figure 5: Anaheim is trying to emphasize development with retail and restaurants on the ground floor with housing units above.

the City could avoid social problems from displacement. The mix of land uses also allows the few industrial and manufacturing companies to continue their business.

Mixing land uses diversifies the local economy, providing more opportunities for retail, restaurants, and smaller businesses. Because of the Angels and the Ducks, the area already attracts spectators, media and broadcasting crews, tourists, and wide range of personnel associated with maintaining the team and the game (janitors, food-service clerks, game clean up, team doctors, team trainers, etc.). Retail stores, restaurants, and neighboring office space strengthen the area's economy by attracting business from those that frequent games. This also adds other types of activity to the area, "necessary," "optional," and "resultant", which Jan Gehl asserts will then draw in more people and business (Gehl, 1980, 100). Through businesses that cater to the local population, Anaheim is trying to apply strategies for Community Economic Development, especially regarding employment (Roseland and Soots, 2007, 248). However, Anaheim was most concerned with increasing land values which increase tax revenue for the City. They were able to accomplish this as land values shot up by as much as $5 million per acre (Murray, 2007).

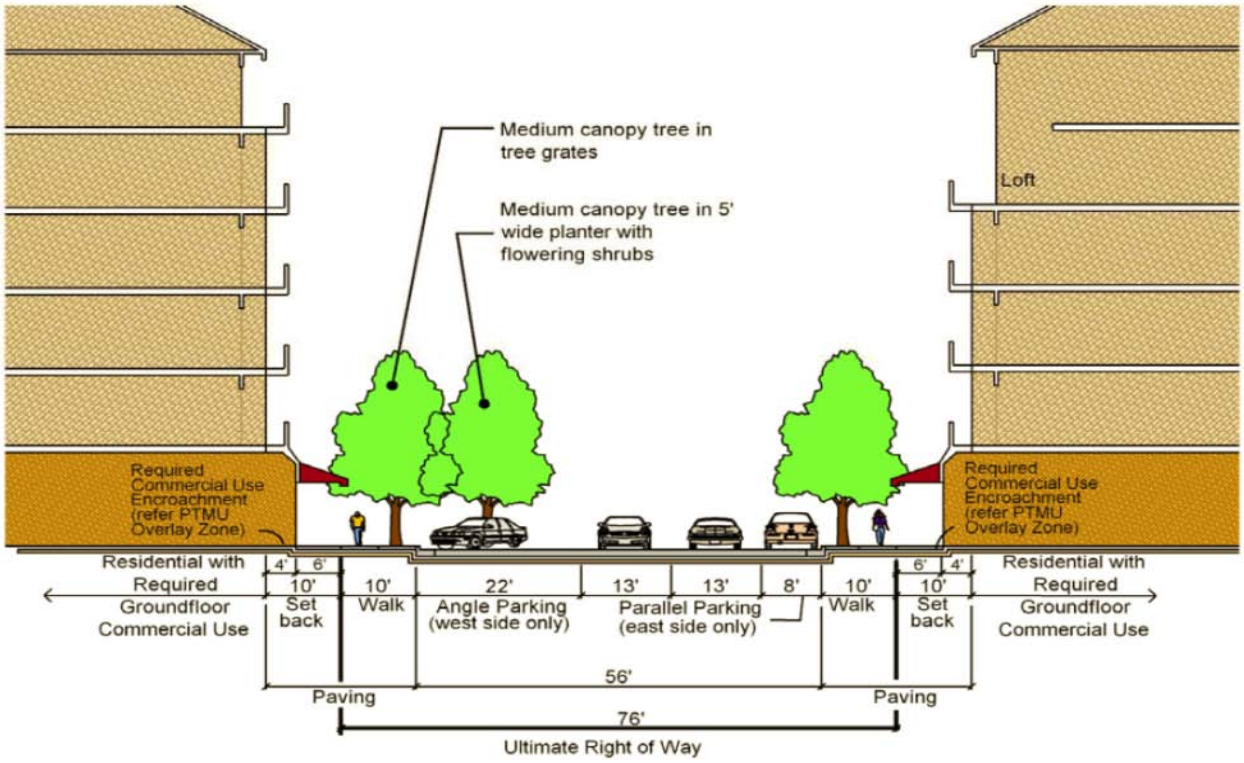

Figure 6: This illustrates the physical elements in creating an attractive streetscape.

Through walkable streets, open space, and consistent landscape, Anaheim hopes to link the different uses and maximize long-term property value (City of Anaheim, 2008, 14). They are emphasizing a vibrant, walkable urban environment to increase the quality of life and land value in The Platinum Triangle. They looked to Larchmont Boulevard in Los Angeles, 4th Street in Berkeley, Union Street in San Francisco, and Gaylord Street in Denver as precedents for creating small scale active local streets (City of Anaheim, 2008, 19). The Plan calls for medium-to-high density housing with retail, commercial, and industrial uses on the ground floor and the City has started to cut superblocks created by parking lots and warehouses into smaller blocks with street segments (City of Anaheim, 2008, 16). They have narrowed Market St to just two lanes, widened sidewalks, and added street trees, benches, thematic street lights, and opportunities for sidewalk cafes and urban parks (See Figure 6) (City of Anaheim, 2008, 19). This strategy follows many of the "Essential Features" in Reid Ewing's ideas for smart growth: medium-to-high densities, mix of land uses, short to medium length blocks, narrow streets, continuous sidewalks for couples (Ewing, 1999, 2-12). Beautifying the streetscape with trees, landscape, and lights align with Ewing's "Highly desirable feature" and "Nice Additional features" like having nearby parks and other public spaces and functional street furniture in benches and cafe chairs (Ewing, 1999, 12-20). According to Newman and Kenworthy, such "traffic calming" measures can result in reduced noise, less air pollution, and enhanced pedestrian and street activity (Newman and Kenworthy, 1999, 127).

A walkable environment and an active center relate to accessible transportation. Located just across the street from Angels Stadium, the City is building a transportation hub called ARTIC (Anaheim Regional Transportation Intermodal Center). Here, ARTIC will be the home to the already existing rail lines from Metrolink and Amtrak, the south end stop for California's High Speed Rail, rail stop for the bullet train to Las Vegas, and the hub for a Bus Rapid Transit system for transportation within the city. The City has used the sports stadiums as a node to expand transportation options. Robert Cervero would call this sort of transit development a "hybrid" between adaptive cities and adaptive transit (Cervero, 1998, 119). Transit is being used to serve both the suburbs and the central city. By doing this, Anaheim

gradually evolves from a car-dominated city to an accessible city with eco-friendly options like walking and public mass transit.

Unfortunately, Anaheim has not made housing accessible to everyone. The Platinum Triangle only offers luxury apartments, condos, and lofts; a typical 2-bedroom unit rents for $2500 per month or is priced at $402,000 (Collins, 2008). The City has failed to implement "inclusionary zoning" requirements that mandate developers to make a certain percentage of units in each project affordable (Wheeler, 2002, 105). The City adopted a Mixed-Use Overlay Zone which specifies that new development needs to plan for at least 15% of units to be affordable (for households making 50% or less of the median) but does not require that they get built (Murray, 2008). As a result, Anaheim's other strategies to implement sustainable development are negated. The majority of jobs generated by The Platinum Triangle development are low-wage workers like janitors, office workers, and food-service clerks whose $11 hourly wage is nowhere near the income necessary to afford a home in The Platinum Triangle (Murray, 2008). To add to this exclusion, the majority of these workers are minorities and Hispanic immigrants which only further perpetuates the vicious cycle of poverty and racism. Because the housing supply is not appropriate for the high demand, developments have had trouble selling. For instance, Stadium Lofts, a luxury condo development, has yet to sell half of their units and has shifted to hefty price reductions by 24% and extravagant bonuses (Collins, 2008). Developers blame the slow market on the recent economic recession but the demand for housing is present for lower-income households. These results have slowed down development, making The Platinum Triangle an unsightly mix between halted construction sites and vacant apartments. The Platinum Triangle's pedestrian network will also lose its effectiveness on sustainability because workers will be commuting from afar instead of walking to work.

The Platinum Triangle also demonstrates little commitment to reducing its eco-footprint other than transportation. The City has not specified the use of renewable energy, using a greywater recycling system, mitigating waste to landfill, or using energy efficient buildings. Instead, the City is concerned with land values and revenue.

Anaheim's The Platinum Triangle remains a work in progress. The City has tried to integrate the sports stadiums within the urban fabric to make it more sustainable by making the area a center of activity for the city and the region. The City and the area continue to struggle because The Platinum Triangle is intended to attract up-scale and wealthier citizens while excluding the lower-income population that would really benefit. This has proven unsustainable as construction is stalled and low-income workers must still commute by automobile from afar.

Camden Yards—Baltimore, MD

In the 1950s, Baltimore became an industrial wasteland. Its port became obsolete because ocean vessels were no longer the primary mode of shipping. Post-war suburban housing and accessibility on the regional highway system also moved people and businesses out of the central city. Although the City has yet to regain the stature of its heyday, Downtown Baltimore is now a vital urban core. Camden Yards, home to the MLB's Orioles and NFL's Ravens, is a major magnet that attracts visitors, residents, and businesses. Though it is now approaching twenty years of usage, Camden Yards remains a model for how to integrate stadium architecture and development into the city because of its revitalization and economic efforts.

http://www.flickr.com/photos/butylman/1353825504/size

Figure 7: Baltimore's Inner Harbor features the downtown and is adjacent to Camden Yards.

Baltimore focused on developing the surrounding area before developing the stadium. Unlike Cowboys Stadium which was constructed in hopes of creating a booming entertainment district, the Camden Yards project was placed into an ongoing development plan. Since the 1960s, Baltimore had focused on revitalizing the nearby Inner Harbor (see Figure 7) through the determination of an eager business community willing to engage in public-private partnerships

(Millspaugh, 2003). By the 1970s, The Charles Convention Center, office buildings, mixed-use development, and housing for all income levels had established the Inner Harbor as a Central Business District (CBD) (Granath, 2005). In the 1980s, Baltimore added restaurants and hotels to comply with forming an entertainment industry in the CBD. They hoped to attract more people and resources to the area and to move the middle-class from the suburbs back to the city. By building in an already developed area, the stadium had an easier transition into the existing economy and ecology because a local economy, housing, and economy were already established.

To capitalize off a growing downtown and the baseball hysteria surrounding the Orioles' 1980 World Series win and the legendary Cal Ripkin Jr., the City looked to expand their CBD west to Camden Yards, an abandoned and deteriorated rail yard in the late 1980s. Orioles Stadium was completed in 1992 and spurred life back into this deteriorating neighborhood. This form of infill development not only kept the baseball team and resources inside the city and away from greenfields, it provided opportunities to residents and businesses in the neighborhood.

Stadium development included outdoor public space where local vendors could sell food, beer, and merchandise. During games, this plaza, known as Eutaw Street (pictured in Figure), is accessible to either Orioles' game attendees or to those who frequented the local restaurants, such as Boog Powell's which was located just to the exterior of the

http://www.flickr.com/photos/kensaviation/206981904/

Figure 8: Eutaw St is a bustling plaza with many different restaurants and stores.

Stadium. This encouraged a "life between buildings" by providing variety in the forms of activity: socializing, eating, walking, entertainment, etc . (Gehl, 1980, 101). It also helped create a baseball culture and experience in the area that was more pedestrian-oriented.

Stadium development also focused on adaptive re-use to revitalize the area. For instance, the Baltimore & Ohio Warehouse which formerly held railcars, freights, and carloads was turned into a mixed-use building for team offices on the upper floors and local restaurants, bars and stores on the ground floor (Chapin, 2004, 198). Thus, this old and historic structure was able to find new life and act as a gate between Baltimore's historic region and its future. Instead of destroying old structures and rebuilding with new materials and resources, development for the stadium could use existing structures and limit their ecological footprints. In this way, we see that the stadium and plaza stand as strong examples of infill development, adaptive reuse, and historic preservation. Such infill development would also attract more businesses and a stronger local economy.

The success of Camden Yards was able to add some momentum to attracting other anchor businesses. Restaurants, hotels, and offices followed and inserted capital into the local economy. The Hyatt became the first major new hotel in the area and signaled a shift to a growing entertainment district (Granath, 2005, 21). This crystallized when an NFL team came to Baltimore, atoning for the city's previous loss when the Colts moved to Indianapolis. This suggests the Baltimore Ravens franchise found the city attractive because the area had an existing market, economy, and infrastructure to support another team.

As a result, the property values of the Camden Yards neighborhood also increased. Based on Simeon Oliva's regression analysis of housing prices, only land in the immediate vicinity of the stadiums and Inner Harbor appreciated in value, while spillover was minimal (Oliva, 2006, 17). On the surface, such change may seem unequal or even negative; yet, this also meant that people living in the region of the development were not priced out of the region by rapidly increasing land and service prices. The gradual increase in surrounding land values allowed pre-existing residents to remain in their homes and assume a middle-class role.

While land price growth was unequal, many residents were not priced out of the market as change was gradual and not too stark.

However, a major criticism leveled by Chapin, among other scholars, is that the stadium has not rejuvenated the housing market in Camden Yards or spurred business development far outside of the stadium (Chapin, 2004, 206). The stadium promised to be successful on both of these fronts and it has failed miserably on both, as there was no proactive effort to rebuild Camden in conjunction with the stadium (Chapin, 2004, 207). The stadium worked well with the Inner Harbor because development was happening there, regardless of whether a stadium was being built or not. Because future development was dependent on the stadium, and once the stadium was built and there was less urgency to develop the neighborhood, future developments fell by the wayside.

http://www.waterfrontpartnership.org/_images/newmap.gif

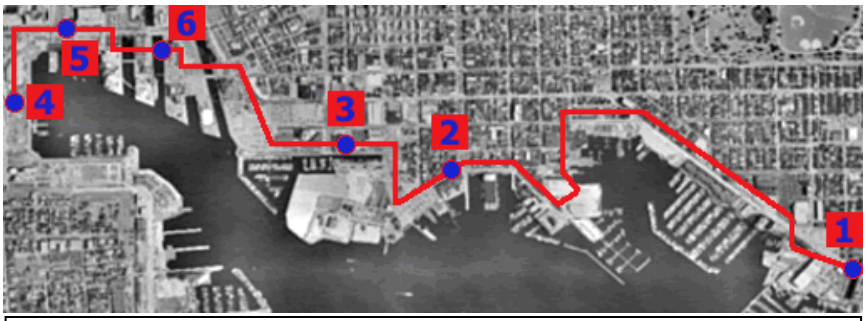

Figure 9: This aerial shows the promenade and pedestrian connectivity from the Inner Harbor to the west to Camden Yards.

Due to uncontrolled development in the early 1990s, there were too many high-rises blocking views of the harbor, the streets were very poorly connected, public transportation to the area had become limited, and congestion was a major problem. For the last three of these problems, the stadium proved to be a strong salvo. The new influx of people forced planners to create a stronger master plan which would create safe pedestrian walkways. Instead of out-dated overpasses, promenades along the harbor and piers were constructed, which connected the Inner Harbor region with the stadium. This type of connectivity, in which buildings were closer together and accommodated foot traffic, resulted in Jan Gehl's ideas of an outdoor and public street life where people are coming and going (Gehl, 1980, 102). These promenades also provided adequate viewing spaces for demonstrations in the Harbor (Millspaugh, 2003). Furthermore, in an effort to boost the local economy and streamline

tourism public transportation to the downtown was increased, as people needed ways to get to the games (Granath, 2005). On the Opening Day of the stadium as many as 35% of the game's attendees arrived via public transportation (Prowler, 1992, 26). Furthermore, in an effort to boost the local economy and streamline tourism public transportation to the downtown was increased, as people needed ways to get to the games. (what was built, cite something specific).

While the waterfront development seemed to have marginal impact on improving the lives of city residents in the area, it did provide a stimulus for the local economy. The miles of abandoned, derelict buildings that crowded its harbor as late as the 1970s have given way to Harbor development, with its broad marble and stone plazas, fountains, restaurants and bars, aquarium, and the two-block-long translucent pavilions developed by the Rouse Corporation (Granath, 2005, 36). The region reused land, was able to preserve a sense of history, and kept the city condensed. By strengthening a downtown and avoiding spreading out the city, Camden Yards exemplifies some of the "smart growth" techniques espoused by Ewing et. al. As Oliva notes, the city leveraged public monies effectively to spur private develop, and thereby develop from without to a stadium within (Oliva, 2006, 25).

Gateway Project– Cleveland, OH

Like Baltimore, Cleveland also looked to revitalize the downtown but they used the sports stadiums as catalysts for regeneration rather than just an extension. After experiencing white flight and strong disinvestment, in the 1980s Cleveland conceived an idea to build a joint domed baseball and football stadium and reignite life at the Gateway Project – so called because it was the point at which two confluences met and where residential Cleveland met downtown Cleveland. The City would eventually evolve this plan into a ballpark for the MLB's Indians, an arena for the NBA's Cavaliers, and a stadium for the NFL's Browns (Chapin, 2004, 202). Reviving Cleveland continues today and the Gateway is becoming a strong urban center for the "Comeback City."

The sports complexes catalyzed infill development and adaptive re-use. This area had originally been a popular city market place from 1857 until the 1970s but had turned into

http://img41.imageshack.us/img41/9809/img1662c.jpg

Figure 10: The Buckeye Building was formerly abandoned but has been readapted as a mixed-use building with restaurants on the ground floor and apartments on the floors above.

surface parking reserves and abandoned buildings (Chapin, 2004, 202). By opting for infill development, the City could restore the blighted area and bring back suburbanites to the center much the same way that Baltimore did. Cleveland also wanted to bolster historic pride and really focused on adapting old buildings instead of tearing them down. In 1995, the Buckeye Building was preserved and made into 36 lofts and apartments (See Figure 10) (Bullard, 1995). Other types of adaptive re-use followed: the Colonial/Euclid Arcade became the home to the Colonial Hotel, and a warehouse at 737 Bolivar became commercial and office space (Chapin, 2004, 203-204). Using existing land and buildings is less environmentally intrusive than destroying buildings and starting anew. Such strategies become increasingly important when demolition debris accounts for 48% of the waste stream (Franklin Associates, 1998, ES-2). Not only did this type of development curb waste and resources, it energized the local economy because these buildings became the home to housing, retail spaces, and new restaurants.

Retail stores, restaurants, bars, hotels came to the Gateway, forming a reliable service industry. As of 2004, redevelopment projects in this area alone were valued at $250 million (Chapin, 2004, 206). In fact, these redevelopment projects are becoming anchors in the district's economy. East Fourth Street, a redevelopment which features a mix of restaurants, nightclub venues, retail stores, offices, and housing, is always busy and has benefited from the increased foot-traffic of sold out games at Quicken Loans Arena, the basketball stadium a block away (Schneider, 2009). The commercial success of the Gateway has led to $450 million of investment in the last decade to adapt dilapidated buildings into mixed-use developments

(Schneider, 2009). Ari Maron, a local developer, also emphasized that he targeted local entrepreneurs and businesses to preserve the charm of the neighborhood (Schneider, 2009). Instead of trying to bring in national chain stores and corporations, providing opportunities for local businesses keeps capital within the community. It also allows local restaurants like Winking Lizard or Michael Symon's Lola's to become icons in the city. The environmental design of the Gateway also contributed to this friendly and local atmosphere and was an important factor in attracting people and businesses.

Cleveland planners and developers stressed an attractive streetscape in which people could walk and interact with each other. East Fourth Street best exemplifies this objective. Mr. Maron focused on creating a lively atmosphere by adding flowers, decorative paving, planters, outdoor seating, and ribbons of white lights (See Figure 11) (Schneider, 2009). The area is also a pedestrian-only zone which fits in with the City's aim to make the downtown a walkable and vibrant place. Cleveland emphasized visual and physical connections to the surrounding district in the form of planned, funded, and constructed pedestrian pathways to other nearby activity centers (Chapin, 2004, 202). Attractive streetscapes and well connected streets running straight to the downtown, as well as strong visual connections to the downtown allowed the area to truly act as a "Gateway" between the downtown and the rest of the city. To ensure pedestrian access to the sports venues and surrounding businesses, Cleveland implemented a public transportation system that provided many options.

http://graphics8.nytimes.com/images/2009/07/08/business/

Figure 11: Located a block away from Quickens Loan Arena, East Fourth Street is active at almost all times of the day.

http://web.presby.edu/~jtbell/transit/images/Cleveland/Waterfront/RiverView.jpg

Figure 12: The Rapid Transit light rail connects the Gateway to the downtown on the Waterfront Line.

Cleveland's Rapid Transit Authority (RTA) strategically positioned routes and lines to intersect with the sports venues. Rapid Transit (See Figure 12), Cleveland's light rail system, located stops at the stadiums and arenas (Hutchinson, 2007). This improved accessibility to the region and stadium, limiting congestions, and conveniently connecting the city. For instance, the Waterfront Line, which connects the main heavy rail Red Line with the light rail Green and Blue Lines, has a stop at Browns Football Stadium (Bell, 2002). According to the RTA, the city also offers a Bus Rapid Transit System and trolleys in addition to heavy and light rail (RTA, 2009). This public transportation system is so successful in servicing the 6 million people that come every year to the Gateway for games and entertainment that the sports venues do not even need to offer surface parking (Chapin, 2004, 196). Multiple transportation options reinforce businesses and keep the community thriving.

Creating a strong framework of business, activity, and transportation in the Gateway allowed commercial success to spillover to the rest of the downtown. The focus on visual and physical connectivity between the Gateway and downtown has spread success to the Tower City Center, Public Square, Convention Center, Rock & Roll Museum, and Galleria Mall (Chapin, 2004, 203). However, so much emphasis on attracting suburbanites and inserting capital has left a number of problems too.

The largest criticism is that although 800 units of housing have been added to the district, very little of it is affordable to low-income households. In fact, much of it was intended

to attract middle-to-high-income residents (Chapin, 2004, 206). This has resulted in some pricey condominiums which can cost $289,900 for just a 2-bedroom unit (Schlenkerman, 2009). Such high housing costs can cause the area to gentrify and displace people.

Focusing on the downtown's entertainment district can also lead to disinvestment and neglect in other areas that need attention and capital. For instance, as people and businesses matriculate to downtown and the Gateway district, another district in Cleveland called Flats suffers from disinvestment and struggles to remain relevant (Chapin, 2004, 207). Essentially, while the success of the site has spilled over into the downtown and connected the city, this spillover effect has been limited as it has caused other areas to be neglected.

By using sports stadiums as a catalyst for revitalization, Cleveland has been able to transform the image of the Gateway district and the downtown from an abandoned and blighted area to a lively and energetic urban center. The next step for Cleveland is to address issues of social equity to try to achieve sustainable development. Cleveland's shortcomings also show the limits of sports stadiums to be able to add benefits to everyone.

Conclusion: Lessons Learned

From Dallas, Anaheim, Baltimore, and Cleveland, we can draw some lessons to be learned and identify some strategies that make integrating a sport stadium more or less sustainable. Dallas is a prime example of how to not integrate a stadium through sprawl development as Cowboys Stadium has contributed to resource depletion, environmental degradation, and outmigration of economic and social capital. Anaheim, Baltimore, and Cleveland show the potential for infill development to revitalize an area, create an activity node, and use existing infrastructure while conserving resources and greenfield. These cities demonstrate the importance of supporting local entrepreneurs and businesses to create a strong support network. As Anaheim, Baltimore, and Cleveland have shown, designing attractive streetscapes and plazas are essential to promoting walking as a viable mode of transit. Anaheim and Cleveland further highlight how stadiums can be used as catalysts to expand the transportation options and offer modes with a reduced carbon footprint. Baltimore and Cleveland emphasize connection and access between the stadiums and the downtown

through passageways. These older cities also highlight that an established downtown and sports stadium can complement each other well.

All four cities must still improve on providing opportunities to low-income residents and workers, especially since they struggle with poverty and carbon emissions from commuters travelling from afar. Inequalities between the haves and have-nots impact increase impact the effectiveness of integration strategies. Additionally, Dallas, Anaheim, Baltimore, and Cleveland have yet to address renewable energy sources and curbing overall energy use to reduce depletion of resources. There has also been a lack of focus on water use although Baltimore and Cleveland have chosen to locate their stadiums near the waterfront. This, however, is more a strategy to attract people and business rather than to efficiently use water or explore hydro-power. The economic component of sport stadium development is often the focus but the environmental and social considerations are becoming increasingly emphasized. Stadium development in these cities still have a long way to go before they can adequately address environmental, social, and economic issues.

These findings illuminate the difficulty by which sustainable integration and development can occur. Cities like Anaheim, Baltimore, and Cleveland can transform the image of blighted areas and make stadiums more revered landmarks but numerous problems and challenges still remain. Baltimore and Cleveland, classic Rust Belt cities, aim to reverse decline and reclaim a sense of their heyday. Meanwhile, Dallas and Anaheim are growing Sun Belt cities which are more susceptible to expansion and new development. The historic and cultural context of the city matters too, framing the support and implementation of strategies, and influencing how effective they will be. These circumstances make sustainable development increasingly complex.

For stadiums, living lightly requires a comprehensive effort. Anaheim, Baltimiore, and Cleveland have taken great strides towards achieving sustainability, providing inspiration for others to implement similar techniques and to see sports stadiums as integral entities to the city's overall health. With effort and strong support, perhaps someday in the future, we will be able to see these sports venues as truly vital and sustainable organs in the city.

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Images from cover page: Top Left: Cowboys Stadium, Top Right: Angel Stadium; Bottom Left: Progressive Field; Bottom Right: Oriole Stadium.
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Anaheim: http://www.flickr.com/photos/bobindrums/2327545644/sizes/l/
Cleveland: http://www.flickr.com/photos/69805768@N00/678204590/sizes/l/
Baltimore: http://www.flickr.com/photos/bunkosquad/1977220/sizes/o/