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Retrofitting Cities: A Case Study in Baltimore - Exploring New Trends in Urban Greenways

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Introduction

Landscape Architecture is presented with a unique design challenge in the contemporary city as ideas of green infrastructure and sustainability are gaining significance, and the emerging role of greenways' importance in shaping future urban form. There is significant discussion of the role of urban greenways along natural corridors providing recreation and environmental services in cities (Gobster &Westphal et al., 2004) as well as the role of greenways in creating synergy on differing scales addressing sustainability and connectivity in urban areas (Sharma, 2010). Additionally there has been an emerging discussion of how Detroit and other "blighted" or "legacy" rust-belt cities are turning to urban agriculture, new economies and other progressive or adaptive land uses to address sustainability, community development, and urban infill (Reed 2012, et al). However it is unclear how or if these land uses are part of a larger systems wide approach and to what extent already existing greenways can anchor these objectives.

This ongoing project is a critical review of how cities such as Baltimore can use established design approaches paired with greenway development to address the underutilization of space and lack of connectivity which have resulted in urban fragmentation, population loss and declining economic activity in recent decades. Are these design approaches sufficient to retrofit a city? Can landscape architecture provide design solutions by extending greenways technology and theory out from the stream valleys and onto the ground plane of our urban public realm to meet those goals of connectivity? Landscape ecological urbanism provides a foundation to bridge the gaps between theoretical approaches of landscape urbanism and the scientific approaches of urban ecology by recognizing that cities are essentially human dominated ecosystems (Steiner 2012). By acknowledging that landscape urbanism projects can improve the quality of life in cities, we can now advance our systems thinking as to how these projects can become more integrated into the related discussions of ecosystem services and future urban form. This project looks at those related and evolving theories to examine which landscape design approaches are relevant and what the future might look like for cities with shrinking populations, an abundance of space, and rich cultural and ecological diversity – with a focus on the role of current and future greenways in those cities.
The underlying intention of this research is to look at how the built environment between greenways can be adapted to create a meaningful sense of place and synergy to an emerging greenway network.

What is a Greenway?

As we know Greenways have many definitions, ranging from ecosystem corridors, to biking/hiking trails, commuter routes, recreational areas, river valleys, and so on. From the environmental perspective, Ndubusi argues "Environmentally sensitive areas when interconnected, could serve as greenway corridors consisting of networks of linked landscape elements that provide ecological, recreational, and cultural benefits to a community. By

implication, the process of protecting environmental sensitive areas could serve as a tool for locating and managing greenways" (1995). Or as Ahern notes in a nod to strategic planning, "Greenways, do not attempt to transform or control the entire landscape, but by focusing on riparian corridors, and other environmentally sensitive areas, greenways are more modest in their ambitions, while exploiting selected linear elements in a strategic and synergenistic manner" (1995). With varying definitions and changing scales though, there is a unifying theme though as Chuck Flink noted at the 2012 ASLA conference is that Greenways connect us with the outdoors, with each other, and with popular destinations.

Although emergent, there is still a lack of deliberately planned greenways in the already built environment. Walmsley approaches the subject from a distinctly urban point of view, articulating that there is no 'kit of parts' for green infrastructure, and that urban theorists often overlook streets as available public space to be incorporated into green infrastructure. It could be argued that contemporary green infrastructure advocates have taken the public street into consideration with the growing prominence of complete streets, walkable communities, and New Urbanism, but his concern holds true today in that we don't see much in the systems wide theory of the street gird becoming part of green infrastructure on a large scale. We are beginning to see case studies examining how public infrastructure is being considered in creating urban networks of connectivity, and even greenways. Walmsley refers to the premise that "a better understanding and application of natural processes (climate, water, plants, soils, wildlife, and food growing) could shape a more productive and sustainable design form for the modern city (1995 p.82). He goes on to talk about how the majority of greenways come from "residual leftovers after development, natural corridors, abandoned railroads, canals, and other rights of way" (1995 p.82) and how these neglected lands could prove ecologically rich due to their not being overlaid with "biologically sterile manmade landscapes." These ideals and strategies are further articulated through various design phases, mainly ecological urbanism, and sustainability movements nearly 20 years later.

There are still gaps in contemporary practice as urban greenways are less common than those found in rural areas and are not often used in the same discussions of synergy. Walmsley notes that these 'make-up' connections might not relate to natural features or ecologically derived criteria, but they will more likely be based on historical, cultural, functional, or political factors or "ridge-ways, transportation crossings, city and town lines, planned routes, and other human interventions which have influenced desire lines and destinations impacting urban development" (1995 p. 84). These green extensions can complete a metropolitan greenway system comprised of waterfronts, bicycle paths, tree lined promenades, streets, pedestrian ways, and resurgent boulevards and avenues to produce essential connections within the built-up city. As Sharma notes, "Greenways should be approached as synergistic landscapes that create harmony amongst the urban system with the broader biophysical system" (2010). Baltimore has the existing ecological corridors in three stream valleys, and the ground plane of the city above provides interesting opportunities to explore the development of ecological, cultural, and economic connections by looking at existing infrastructure, vacant land, public land, and a meaningful analysis of space.

Historical Context for Baltimore

The city of Baltimore has three greenways which helped the city grow from a colonial harbor town to one of the world's busiest ports centered on industry, transportation, and production. These greenways provided the economic and ecological fuel to support a growing population and expanding boundaries. From the Gwynns Falls stream valley on the west, to the centrally located Jones Falls valley, and to the Herring Run in the east, Baltimore is a town which was built on valley and stream economies. Today, however the industries are gone, the population is physically and socially fragmented, and there is little recognition of the potential contemporary value of past and future greenway systems.

The three stream systems acted as economic generators for a new colonial city in the 1600s as human settlement followed the Gwynns Falls and Jones Falls west and north out from the main Harbor. These streams were the foundation for early colonial plantation economies centered on farming, fishing, and access to sea trading routes. As the town developed an urban core on the shores of the harbor, human settlement moved further upstream through to the 20th century, harnessing the power of streams themselves for grist mills and textile production, or taking advantage of the relatively gradual contours and for accessible transportation, such as railway lines, mill races, and carriage paths through to the 20th century (Orser, 2008). Meanwhile in east Baltimore the Herring run evolved from a fishery, to granite quarry acting as economic generator further away from the urban core.

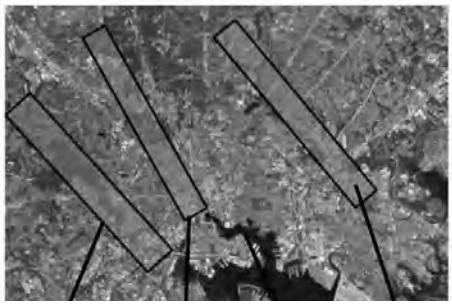

FIGURE 5. BALTIMORE'S THREE STREAM VALLEY GREENWAYS, DIAGRAM BY AUTHOR, GOOGLEEARTH

Today all three stream valleys are within the city limits of Baltimore, city of nearly 620,000 people and comprising a total land area of nearly 81 square miles (U.S. Census).

The Gwynns Falls hosts a multi-purpose 14 mile pedestrian/cyclist trail from the western edge of the city to the middle branch of the inner harbor in a mostly natural wooded setting with some adjacent to residential and industrial uses. The Jones Falls valley, now host to an interstate highway and light rail line has a planned greenway trail from the northern edge of the city to the inner harbor, through natural and urban settings. The Herring Run stream and wooded valley runs through suburban northeast Baltimore before out falling into Back River and the Chesapeake Bay. It also has gone through the master planning phases for a linear multi-functional greenway trail. The three valleys alone are ecological amenities - forested stream corridors in a highly urbanized area. However there is a lack of connectivity between the three greenway valleys, and between the communities and the ecological corridors. By using the three existing valleys as a framework for a broader system, we will begin to address issues of connectivity, ecology, and urban communities through greenway design.

The Process for Baltimore - Programming the City

It is proposed that combining the thinking of greenways theorists with the sustainable ecological urbanism theories to construct real value laden greenways in our urban areas will transform our outdated and fragmented grid into a vibrant, responsive network of community and ecological amenities. Research has found the majority of greenway planning has been in the pre-development stage of planning or in the left over spaces of stream valleys and undevelopable land. In urban areas such as Baltimore though, there is now an availability of land that doesn't fit into those categories. With the emergence of sustainable urbanism, can this unused land be used by designing greenways to connect these projects? Can these efforts be supported by finding value and using those values as anchors along the physical route to retrofit the city?

In many urban areas there may be an acknowledgement of the natural world, but there is often little recognition of the valuable interdependency that human systems, urban systems, and the natural world have in shaping an interconnected public realm. Greenway planning and progressive land design methods may be able to address fragmentation and stitch the surface of the city through green networks. The emergent urban construct is possibly synergistic, "a hybrid that is not entirely one or the other" (Beardsley, 2007, 202). Meyer's articulation expresses that "replacing this binary way of thinking with other conceptual strategies, landscape architecture can foster a land ethic and an aesthetic predicated upon a continuum between human nature and nonhuman nature, upon a recognition that the land is a cultural and physical product and that people are living organisms" (Meyer, 1997, 51). New greenways purposely designed as part of a larger green infrastructure can define public space as an infrastructure to dismantle disconnects between nature and culture.

In *Programming the Urban Surface* Alex Wall talks about the contemporary metropolis and how peripheral sites are often overlooked by designers as the core downtown areas are heavily programmed for tourists, or visitors, or day time workers, he observes that" The grafting of new instruments and equipment onto strategically staged surfaces allows for a transformation of the ground-plane into a living connective tissue between increasingly disparate and unforeseen programs" (Wall, 1999, 234).

New greenways or adaptive networks can act as infrastructure – as the basis for future growth or current connection, and that previously built on sites can be reactivated both as places of their own and as parts of a larger network as instruments unfolding the new urban realities. This also enables the landscape architect to become more intrinsically engaged in "programming the urban surface." The physical connections which will activate peripheral zones by infilling blighted cities through realizing new greenway networks based on recognition of the interaction between the public and private realms, and the built and natural environments as all interconnected parts of one larger system of urban synergy.

As Steiner suggests, landscape ecological urbanism provides a foundation to bridge the gaps between theoretical approaches of landscape urbanism and the scientific approaches of urban ecology by recognizing that cities are essentially human dominated ecosystems (Steiner, 2012). By acknowledging that landscape urbanism projects can improve the quality of life in cities, we can now advance our systems thinking as to how these projects can become more integrated into the related discussions of ecosystem services and the future of urban form. Is it possible to begin

to think of greenways, not in terms of left over spaces, but more in terms of promoters of value in a city? Can a new type of deliberate greenway planning connect valuable amenities in our cities? Will the new type of greenway planning be that of the value laden greenway? That is to say, that it will be planned by analyzing existing amenities such as schools, parks.

Designing a Value Laden Greenway for Baltimore

By looking at historical and emerging trends in landscape architecture we are given perspectives for which to approach these legacy cities and propose design solutions. By taking into account physiographic, cultural and ecological inventories with modern and evolving land use and design practices we are able to move forward in implementing the re-adaptation of urban spaces to be new types of greenway networks and sustainable urban infill projects. The concurrent phases of this project will look at how Baltimore fits all the criteria of "Legacy City" as a result of declining industry, social stress, shifting economics, there exists a city now, which was built for 1,000,000 residents, but now has nearly half that, with an outdated and aging infrastructure. The city is becoming increasingly fragmented, (spatially and socially) as a result of shifting demographics, social responses to development trends, and the physical geography.

Baltimore's gridded system stemming from spoke and wheel planning has guided land use policies stemming from the foundation of the city as a seaport through to today. Most movement and activity is organized along north - south running collector streets acting as the spokes while there is significantly less infrastructure dedicated to lateral east west movements of people. And all movement is relegated to the automobile which has severe economic and environmental consequences. There is however an engaged civil society, a number of active large private institutions (namely medical and educational), a large (but perpetually diminishing) Recreation and Parks Department, an expansive but inefficient public transit system and a noteworthy green infrastructure. Of particular interested is high number of vacant and empty lots within the city. Their number and proximity offer an interesting perspective for which to view their future uses as connecting points between residual spaces and potential increase in their ecological as well as cultural value.

Chief among this significant green infrastructure are the Gwynns Falls, Jones Falls, and Herring Run stream valleys. While these are cultural and ecological assets for the city, the fact that they are not part of the same unified network system is a detriment to the greenways themselves and the communities that make up Baltimore. It is proposed that by looking at the land in between the greenways we will be able to propose a value laden connecting route, based on anchors.
Anchors to be considered to help delineate a meaningful route are cultural amenities, schools, universities, public open space, parks, vacant land, brownfields, highpoints with views, historically significant spots, new economic opportunities, and existing economic opportunities. It is thought that by creating a unifying route anchored by these institutions there is the real opportunity to increase access between existing neighborhoods and between the three Baltimore greenways so that social and ecological systems can be made stronger.

Figures 6-4: Examples of possible anchors located between the stream valleys to determine future greenway network route- vacant land, public park, and existing infrastructure corridors

As the greenway network brings more social connectivity in and between neighborhoods there emerges the next phase of addressing how to activate underused land along the route in an economically and ecologically productive manner. Four categories of future land use to consider along this new greenway network are public works assistance, public open space, regenerative land, and productive land. Looking at the new greenway network through these lenses will offer design interventions which help define the greenway as more than just a connecting route, but as an emerging and cultural and ecological amenity that is adapting to new forms or economy and geography.

Conclusion

It is thought that the network will take on various forms as it integrates the duality of the existing urban grid and the existing natural green stream corridors. It will provide unique user experiences of new ways to engage the various local systems which are interconnected. The previously discussed theories of ecological urbanism, synergism, and the role of ecosystem services through place making will act as a guide in land-use issues and networking in a "Legacy," post-industrial, fragmented city of Baltimore, so that a responsive, holistic network can emerge, highlighting issues of multifunctional systems, sustainability and urban livability. An inventory and analysis process which defines a proposed route and design interventions which make that route a reality in response to physiology, changing economies, and adaptations to climate change can act as an example for cities as they morph through various phases into a sustainable post-industrial urban economy.

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