

SUPER "SEEDING" A Terrestrial Room

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Without a Sound

In 2008 the world witnessed an amazing transformation with very little tangible recognition – the balance of majority population shifted from rural locations for the first time in history. The world's urban population grew rapidly during the twentieth century, from 220 million people at the start of the century to 2.8 Billion at the close of the century.¹ Over the next thirty years projections indicate that urban populations in developing countries will double. In contrast, developed modern cities throughout the world are facing population declines at an unprecedented scale. Over the last fifty years 370 cities throughout the world with populations over 100,000 have experienced declines of ten percent or more.² Vast metropolitan regions of the United States, Canada, Europe, and Japan are projecting double digit declines in population in the coming decades. This is evidenced by 2008 Census Estimates in the United States which reveal that sixteen of the twenty largest cities from the 1950 Census have diminished in population by significant amounts.

Buffalo, Cleveland, Detroit, Pittsburgh and St Louis have lost more than half of their peak populations. Baltimore and Philadelphia have lost on-third of their peak populations. The most visible byproduct of urban population loss is vacant land. The vacancy often leads to the evolution of unplanned landscapes, or *terrains vagues* – vast zones of conspicuous neglect where residual nature is mixed with industry, waste, and infrastructure.³ As employment centers diminish and outmigration expands, nature begins to reassert itself in these urban landscapes. The resurgent nature may take the form

of urban wilderness, forest, meadow, or succession areas. While these forms of green space, considered outside the context of population loss are typically considered amenities in urbanized areas, they form ambiguous unmanaged landscapes that can contribute to anxiety, reduced property value, and a lack of confidence in a neighborhood's future.

These changes in physical environment have significant social impacts. Since the birth of urban studies research in the middle of the twentieth century social scientists have been studying the social dimensions of urban decline. Brian Berry⁴ and Ray Oldenburg⁵ were early pioneers in examining the impact of neighborhood depopulation on the people that remain in a specific place. Their research focused on the decline of population being proportionally related to a decline in social equity and it called for the focus of physical planning and policy planning strategies that could reverse the decline. Recent research indicates that growth can be a negative influence in promoting social equity.⁶ As a result, there is a new generation of researchers focusing on the development of frameworks and strategies for the promotion of social equity in shrinking cities. The questions they are raising are oriented toward identity of place.

In the fall of 2009 A University affiliated Design Build entity at Carnegie Mellon University, the Urban Design Build Studio (UDBS), initiated a one year long participatory design process focused on the realization of a catalytic demonstration project in the Homewood Neighborhood of Pittsburgh, Pennsylvania. The project was calibrated specifically to address challenges facing shrinking cities.



Figure 1. Montage produced demonstrating physical environment after near term modifications proposed in urban design framework.

Work commenced with a semester long analysis and framework definition project at the urban scale. Over a series of four community meetings the UDBS worked with residents and politicians to identify stakeholders for advancement of the work through strategic design proposals. The following semester the UDBS worked with community stakeholders to identify a single project that represented the needs of the community based on the analysis done at the urban scale. Once the project program was defined, the UDBS collaborated with stakeholders to complete the design of the project through construction documentation. The following summer construction commenced on the adaptive re-use project which will house a non-profit minority business incubator and a for profit café/third space in Homewood. Within a condensed period of time, the collaborative work of the Urban Design Build Studio and the community of Homewood provided an opportunity to speculate about the identity of place in a context of catastrophic loss and disinvestment.

Out of the American cities mentioned above, demographic data illustrates that Pittsburgh consistently ranks as one of the worst performing cities in terms of poverty, crime, employment, income and housing abandonment.⁷ Paradoxically, Pittsburgh is widely regarded as a renaissance city continually rating extremely well in quality of life and affordability studies.⁸ Research conducted by Karina Pallaagst has focused specifically on the phenomena related to the Pittsburgh Paradox. The research indicates that the city has benefitted from four interrelated physical, social, and economic policy initiatives: 1) Focused Preservation of Historic Buildings/Heritage, 2) Diversification of Economy, 3) Promotion of Mixed-Use Pedestrian Friendly Development, and 4) Regionalism.⁹ The first three of the

initiatives identified are universal; there is nothing specific about an attachment to Pittsburgh or the Allegheny Valley. The fourth is informed by a state of mind, but remains firmly connected with the natural physiography; a condition that must be understood as primary.

A Collection of Terrestrial Rooms

When James Parton observed in the *Atlantic Monthly* that industrialized Pittsburgh was "Hell with the lid taken off", his prose was shaped by more than the prevailing smoke and fire of the city's ironworks and glass manufactories; it was also shaped by his specific spatial perspective – looking "over and into" a valley perceived as an abyss. Evidence of this prospect is provided later in the same article when Parton describes the "deep chasm in which Pittsburgh lies....at the bottom of an excavation."¹⁰ The observation about the significance of Pittsburgh's terrain is not unique. Written narrative about Pittsburgh is almost universally based on a discussion of the land formed by the confluence of the three rivers – the Allegheny, Monongahela, and Ohio Rivers. Pittsburgh is built on a portion of the Appalachian Plateau that extends westward from the Allegheny Front; a high escarpment that slices diagonally across Pennsylvania and assures that the western portion of the state is substantially higher than the east. Elevations in Pittsburgh range from 710 feet above sea level where the rivers meet to 1,300 feet at the highest points of the basin. There are three primary topographical conditions from datum line to datum line: floodplains and bottom lands in the river valleys, uplands between rivers and hilltops, and high land at the prevailing level of the plateau. Each datum is connected through a sloping terrain forming the tissue of the city context.

Consequently, Pittsburgh lies unevenly upon unruly land. Communities and Neighborhoods are variously defined by hills and demarcated by hollows. It is not uncommon for Buildings to present facades two stories in height on one side and four or five on another across a distance of no more than fifty feet. The topographic form and consequences thereof, are inescapable. They condition every action, they confine every vista, and they expose every prospect. As a topographic city, perception of Pittsburgh is inherently linked to perception of the landscape. Any depiction of Pittsburgh in aerial perspective reveals urban development and the

underlying terrain with equal weight. At the urban periphery, dense foliage forms a pictorial frame for what is a pastoral setting intervened - one where an expansive panorama appears to encompass the curvature of the earth.

That panorama is critical in understanding the underlying organization of Pittsburgh's unique urban condition. It is an urban condition where changes in level reveal, but also conceal - altering sense of scale, connection, and the perception of finite boundary. Pittsburgh's topographical and pictorial space is organized into what William Rees Moorish defines as "*terrestrial rooms.*" Moorish argues that our concept of the room, and of human occupation generally, is derived from spaces that are enclosed by surrounding landforms - "*Within the uncultivated landscape the landforms contain resources, rooms to contain the heterogeneity of urban growth.*"¹¹ The "*terrestrial rooms*" in Pittsburgh are its neighborhoods. Neighborhoods are the city's strength and the bedrock of its identity; an identity that is simultaneously clear and ambiguous.

Form an Ambiguous and Inverted Identity

While every city has neighborhoods defined by an array of conditions in varying strata of hierarchy - political status, economic and social function, landscape and the built environment, ideology and way of life, and processes of development; those in Pittsburgh are defined physically - by the geomorphic condition. The other conditions inform, but they are secondary considerations to boundary formed by landscape. Ironically, that reality has created a condition of urban ambiguity. Each neighborhood has navigated territories of autonomy and dependency in a manner that has defied clear cohesive urban/suburban identity throughout the city's history.

Each of Pittsburgh's neighborhoods developed an autonomous economic core. Each neighborhood developed an autonomous service based commercial district. Each possesses a distinctive infrastructural form related to settlement patterns. Each possesses unique housing typologies that respond to settlement patterns and localized terrain. And, each has its own ethnic heritage. While the overarching condition in Pittsburgh is urban, healthy neighborhoods, and those neighborhoods that were healthy prior to severe population loss, resemble a collection of modern suburbs. There ex-

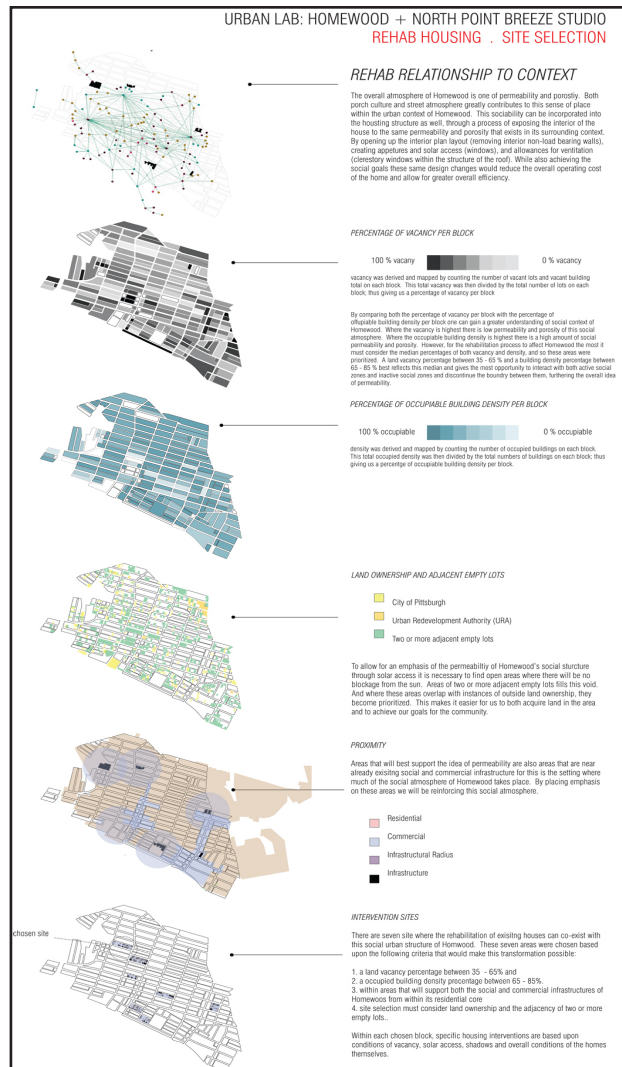


Figure 2. isolated and recombinant analytical mappings produced utilizing PNCIS GIS data sets

ists autonomy, but there are necessities of interdependency consistent with those normally assigned to Combined Statistical Areas (CSA).

The ambiguity that exists is reinforced further if we consider the history of development along Penn Avenue. Penn Avenue is a relatively flat piece of land that forms a linkage from Pittsburgh's Golden Triangle to outlying boroughs that once formed the industrial basin of the Monongahela Valley. The last three miles of Penn Avenue within the City's limits once form the southern boundary of the Homewood Neighborhood. As author Franklin Toker points out, "*This section of Penn Avenue was once the most*

*opulent millionaire rows of Nineteenth Century America. Armstrong, Heinz, Frick, and Westinghouse – the kings of cork pickles, coke and electricity lived here; so did Andrew Carnegie, his mother, his brother, his cousin George Lauder, and half a dozen of his partners – The thaws and R.B. Mellon resided around the corner, aggregating a minimum of three dozen millionaires when the term meant something significant.*¹² By contrast, "Catastrophic Disinvestment" is the euphemism utilized by planning agencies to describe the vacancy that is the prime characteristic of Homewood today.

If we revert to the nineteenth century origins of the word "*suburb*", a word that literally meant sub-urban representing an inferior part of the urban landscape where nefarious activity occurs and marginal populations aggregate, Homewood today is representative of that condition.¹³ As research by Nicolaidis and Wiese indicates, by the twentieth century, the assigned meaning radically transformed. Suburbs came to represent a coveted desirable place sought out by the wealthy and upwardly mobile – a condition that pre-existed this assignation in nineteenth century Homewood. By virtue of its trajectory and characteristic evolution, Homewood's identity has been perpetually anachronistic.

To Be Clarified Through Evolution

Homewood shares this condition of inverted identity with many communities in Pittsburgh which validates applied research in urban design. The work of the (XXX) in Homewood was predicated on broad scaled urban analysis that revealed a specific set of conditions suggestive of a less dense urban form predicated on specific regional needs. The catalytic adaptive re-use project developed for Homewood is biased to synthesize those conditions. But the project cannot be understood outside the context of research and the broader urban framework proposals that evolved from the research. Ultimately, it is the research and resultant urban design that maintain significance in establishing an identity in the context of loss.

Predicated on Opportunity

According to the Pittsburgh Neighborhood and Community Information System (PNCIS) data,¹⁴ There are a total of 4,364 taxable properties located in Homewood. The total number of tax delin-

quent properties is 2,492. Of those properties 2,208 are vacant, representing a total area of 8,309,297 square feet. As of November 2009, the total taxes owed on the vacant parcels is \$5,107,257.00. A majority of the property in Homewood, 92%, has an assessed value of less than \$20,000.00. Of that property almost 30% is owned by absentee landlords living outside the state of Pennsylvania. This representative sampling of demographic data collected and analyzed by the Urban Design Build Studio indicates the social and economic challenges that exist in Homewood.

The urban design framework generated with residents and stakeholders in Homewood specifically addressed social issues as a component of work. There were a number of "*grass roots*" organizations engaged in Homewood duplicating efforts due to communication failures. The framework identified a collaborative influence structure for the different groups and made proposals for the consolidation of efforts in an effort to advance sympathetic causes. The consolidation of the groups enables them to approach civic and political leaders as a unified entity enhancing potential in garnering "*grass top*" support which is critical in program implementation and funding.

The physical environment was assessed and recommendations made regarding Housing, Open Space, Commerce and Infrastructure. Each was addressed qualitatively and quantitatively with a focus on the salient characteristics that can perpetuate a specific identity for Homewood.

In Housing

Porch culture and street activity contribute greatly to the sense of place within the context of the Pittsburgh neighborhoods. These social characteristics can be exploited through greater consideration in the adaptive transformation of existing structures, simultaneously reinforcing interior/exterior relationships in the landscape that can ensure a safer urban context. Simple gestural moves such as removing non-bearing interior partitions, increasing apertures for solar access, and provision for natural/passive ventilation in the horizontal enclosure/roof planes not only improve efficiencies in the overall operating costs of the homes, but provide opportunity for greater social connectivity that engages the visual and auditory connection to the built environment.

The critical factor in the success of these proposals is implementation, and that is directly linked to the identification of appropriate sites is the definition of two parameters, and the relationship of those two parameters to each other. Utilizing GIS data sets and observational analysis students identified percentages of vacancy per block and percentages of occupiable building density per block. Vacancy was derived and mapped by counting the number of vacant lots and vacant buildings on each block. The total vacancy percentage was derived by dividing the count of vacant buildings and lots by the total number of lots on each block. Occupiable Building

Density per block was derived by dividing the number of occupied buildings/units on each block by the total number of buildings/units on each block.

By comparing the percentage of vacancy per block with the percentage of occupiable building density per block one can gain a greater understanding of the social context that exists in the neighborhoods/communities. In this relationship there are clear ends of the spectrum. Where vacancy rates are the highest, there is little viability for a connected social network. Where occupiable building density is greatest there is greater viability for a desirable connected social network. This assessment is based on the physical condition of the structures located within the communities; even where there is a significant density of population, the viability of the housing stock may be prohibitively expensive to rehabilitate. The target areas identified in these studies were those where median vacancy and density percentages exist. Based on research conducted since the fall of 2008, it has been determined that land vacancies between 35-65% combined with building density percentages in the range of 65-85% best reflected the median conditions and provided the most opportunity for improvement of socially jeopardized zones/nodes and the greatest capacity for reinforcing vital zones/nodes. The intention in focusing on the areas defined by the median percentage indices articulated is to blur the boundary, or perceived boundaries that exist between healthy and struggling portions of the context.

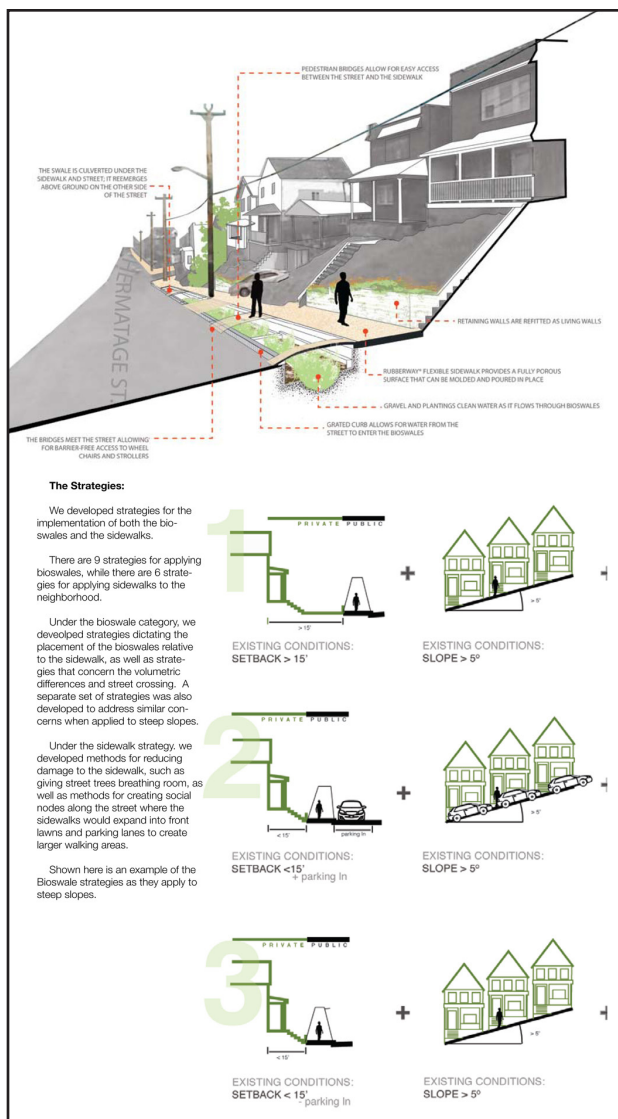


Figure 3. Proposal for bioswale infrastructure to replace municipal combined sewer system.

Adjacency, Ownership, and Proximity

The definition of intervention zones was also informed by physical parameters linked to ownership. The increase in solar access and authenticity of architectural vocabulary can only be maintained if specific physical conditions exist in the landscape and urban context. Similarly, those conditions can only be maintained if terms of ownership are understood. The vacancy and density data sets gathered were compared against a survey of lot adjacencies. Areas where two or more adjacent open lots exist next to an occupied, viable structure located in the median land vacancy/building density zones were prioritized as sites for further investigation. Potential for solar access provided to the existing structures via the open lots was evaluated to understand if there were positive affinities that could be explored.

The ownership of lots became the next overlay filter. Ownership was mapped identifying those lots controlled by and designated as City of Pittsburgh Property, The Urban Redevelopment Authority of Pittsburgh Property, Private Owner Occupied Property, Private Absentee Ownership Property, and

Tenant Property. Those lots controlled by the City of Pittsburgh or the Urban redevelopment Authority of Pittsburgh were given priority. Proximity of these lots to existing social and commercial infrastructure becomes the final filter in site selection, leveraging common assets that can serve the communities.



(Figure 4) Super "Seeded" Evolutionary framework proposal; perspectives at top of image demonstrate additive and subtractive strategies.

To SUPER"SEED"

These site location strategies for selective intervention with existing single family residences were informed and complimented by a framework for the greening of the neighborhood. Employing a combination of additive and reductive strategies, the proposal identifies flexible mathematical model for the provision of recreational, communal, and environmental based on regional constants. The constant in the framework is a reversion to the natural landscape. From this conceptual reversion, existing infrastructure is subtracted. The difference is then further reduced by the viable building stock identified in the analytical research. These two reductive acts yield a potential greening profile that becomes a baseline constant for comparison for the implementation of sympathetic recreational and ecologically based interventions that may enable the community to approach the promise of the constant.

The first act is to define a set of recreational programs that have regional demand as well as local demand. These open air programs are placed into the existing context as they can be accommodated. The plan is based on an even distribution of Pittsburgh city parks which are currently only serving communities demonstrating strong economic performance. The "Re-Creation" plan is then additively altered by a series of "Veins", or connecting systems that respond to natural hydrological patterns extant in the landscape as well as a network of bioswales that will replace the failing combined sewer systems within the community.

An Altered Identity

The physical identity of Homewood would alter significantly through the proposed frameworks, ap-



Figure 5. Comprehensive Framework perspective illustrating composite conditions at five year interval.

primating a synchronistic suburban context located within an urban network. The proposed re-orientation of the community through selective deconstruction, lot reapportionment, land consolidation, and infrastructure realignment can be utilized to facilitate the creation of a unique urban form specific to place. One that respects the fundamental geomorphic physiography as the fundamental component of perpetuating heritage while providing a clear view of appropriate prospect in the context of shrinking population. At once authentic and altered in identity.

ENDNOTES

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- 5 Ray Oldenburg, *The Great Good Place Paragon House, 1989*.
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- 8 Multiple articles and reports have addressed the phenomena of a paradox in Pittsburgh and chronicled the renaissance plans; see David Streitfeld. "For Pittsburgh, there's life after steel," *The New York Times*. January 7, 2009; Todd S. Davis, ed. *Brownfields: A Comprehensive Guide to Redeveloping Contaminated Property*, 2nd edition, (American Bar Association, 2002).
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- 11 William Rees Moorish, *Civilizing Terrains: Mountains, Mounds and Mesas*, (San Francisco: William Stout Publishers 1996).
- 12 Franklin Toker, *Pittsburgh A New Portrait*, University of Pittsburgh Press, 2009
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- 14 Pittsburgh Neighborhood Community Information Systems (PNCIS), University of Pittsburgh Interdisciplinary Research Center GIS Data Base.