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# Steps toward validity in active living research: Research design that limits accusations of physical determinism



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## ABSTRACT

“Active living research” has been accused of being overly “physically deterministic” and this article argues that urban planners must continue to evolve research and address biases in this area. The article first provides background on how researchers have dealt with the relationship between the built environment and health over years. This leads to a presentation of how active living research might be described as overly deterministic. The article then offers lessons for researchers planning to embark in active-living studies as to how they might increase validity and minimize criticism of physical determinism.

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## 1. Introduction

The concept of physical determinism, or most simply the belief that environment can causally influence behavior, has roots in the transitions of the early city. It also relates to discussions in recent years in the field of active living research (ALR) about the relationship between health and the built environment. This is a concept that has been discussed for many years in the areas of environmental design, architecture and city planning: a belief that design controlled behavior; that there was a casual connection between poor sanitation and high rates of crime and morality; that through design these ills could be cured. This bias toward design, has ties to current urban planning practice, as planners seek built-environment-related intervention measures for 21st century health epidemics.

The breadth of work in ALR, or research efforts to use the built environment to influence healthy behaviors, focuses on synergies between the built environment and health. And whether this work introduces green space in the hopes of increasing activity levels (Takano et al., 2002), conducts street design for walking (Frank et al., 2005; Frank et al., 2007), or investigates healthier eating and food access (Sallis and Glanz, 2006; Morland et al., 2002), I would argue that the risk of equating causation with causality becomes tempting. While many researchers have shown research indicating that design or behavioral interventions have the propensity to influence behavior, this presents opportunity to overstate the

relationship between people and place, perhaps unintentionally when such a relationship may be more stochastic. I argue that this may happen frequently in design-oriented ALR efforts and may threaten the validity of such work.

Given the temptation to overstate the influence of design, and the complexity of the topic, this article seeks first to explore the historical basis of built environment efforts to influence health, tracking the development of these efforts over time. Based on this progression, the concept that ALR is deterministic is explored through the lens of the discipline of environmental design. This leads to a conceptual framework that is outlined to better situate continuing work in the field. This framework is provided not to debate whether physical determinism is an appropriate theory, nor if it exists at all, but as a tool to limit accusations of physical determinism that can threaten the validity of research on impact of behavior in important ALR work.

## 2. Background

While the concept of physical determinism could be quickly defined as place and situation influencing behavior, health, and well being, this provides an oversimplification of the idea. The origins of it stem from the concept of miasmas and “biophilia” to the creation of a sanitary city, and subsequent progressive-era moves to understand how the environment and contextual surroundings might “get under your skin” and influence biology. Beginning in the mid-to-late 1800s, international cities were plagued by cramped conditions, disease, filth, crime, and poverty;

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conditions illuminated by those such as Andrew Mearns, Charles Booth, and Jacob Riis. These individuals assisted in shaping the “filth theory”, or the idea that odors from decomposition and things such as stagnant water, unventilated air, and lack of light caused contagious disease. Early thinkers related it to the belief that man was corrupt, but that through environmental design this corruption could be cured (Corburn, 2007).

This pre-germ theory line of thought was consistent with predominant thinking in post-Jeffersonian America, that agrarian life was more wholesome than city life. Cities at the time were expanding rapidly and haphazardly, and the era’s sanitary reformers thought that there were “health implications of a city’s site and structure.” (Peterson, 1979, pp. 84). Rectifying these issues involved complex sewerage projects to dispose of refuse and the miasmas of the time, creating what Melosi refers to a “New Health Paradigm” from 1880–1920 (Melosi, 2000). Both New York City and Boston installed over 100 miles of sewer lines between 1849 and 1873. New York at the end of the 19th century had spent \$24 million for subways, bridges, pavings, and water supplies (Boyer, 1986, pp. 9).

While these projects involved complex sanitary engineering, they also worked toward a bigger theoretical picture of disease causation in overall city design. Called the “townsite consciousness”, it was strongly influenced by Frederick Law Olmsted who believed that systematic design could impact behavior – specifically employing the use of open space and parks to provide sunlight and fresh air and relief from disease-ridden slums. Olmsted’s philosophy was based on his experience leading the US Sanitary Commission during the Civil War in which he used shade trees and open space for its sanitary value and reforming properties. In subsequent work he embraced this philosophy that environmental change was tied to social transformation and order. It would become a key design assumption moving into the City Beautiful movement as exemplified in 1893 World’s Fair.

The World’s Fair illustrated the thinking of the time. Improvers noted the problems with congestion and lack of privacy, “which led to moral deterioration; inadequate lighting, ventilation, and sanitation, which created disease and physical deterioration and that large number of backward children... (and) believed that the essence of every social problem was part of the fabric of the city and embodies within it; all varieties of social, physical, and spiritual disorders – crime, saloons, decline of the birthrate, physical fatigue, a steady deterioration of mind and body – developed out of the chaos and physical disarray of the urban form. This disorder was a “contaminating poison,” recruiting members of the lowest grate of humanity.” (Boyer, 1986, pp. 9).

This was during a period when worker exploitation and subsequent labor-related activism was at a high despite economic expansion within city centers between 1897 and 1914, thus improvers thought that the city could embody social change and social order, providing civic orientation with disciplinary and ceremonial order, while at the same time encouraging segregation. Daniel Burnham’s 1893 White City displayed this two pronged premise that spanned physical and social determinism, “that the physical environment itself could discipline humans to achieve a harmonious order with their urban world and that the provision of the most conducive environment, which would ensure the stability of the social order and the progress of civilization, would require constant supervision and disciplinary correction from a centralized political authority.”

As Melosi describes, filth was seen as breeding chaos, “while cleanliness promoted order.” Civic pride and responsibility were necessary attributes of urbanites committed to municipal improvement (Melosi, 2005). The City Beautiful movement represented “the esthetic expression of turn-of-the-century urban reform (Peterson, 1976).” This type of socio-environmental deterministic thinking was applied in the

US and globally in examples including Burnham’s 1909 Chicago Plan, plans for the British Raj in New Delhi, Canberra, Berlin, and Brasilia (Hall, 1996).

Complimenting this philosophy, other contemporary Garden City planners such as Howard, Abercrombie, Unwin, Parker and Osborn believed that by integrating design with nature could cure social ills and make a more productive society. Howard specifically was concerned about social issues and problems, seeing the design of a good city as a way to correct social ills (Howard, 1902). He outlined his ideal city, and explained how it could expand cluster by cluster, in small pods connected by the railways, yet maintain a balance between the city and the country in a blended “Town-Country.” Individuals would adapt to his or her environment through a social Darwinism of adaptation. A better environment would result with grand societal improvements – most importantly reform and peace.

With the onset of the early to mid 20th century, with many of the early contagious disease issues resolved, city design and planning became more institutionalized, yet much of the theoretical construct defined by the culture of City Beautiful and the Sanitary movement remained (Corburn, 2007, pp. 693; Melosi, 2000; Peterson, 1979). Zoning provided a construct to benefit public health and landowner values (Hall, 1996). New deal planning and post-war suburbanism contributed to economic expansion and boosted the economy in a transition from wartime military production. New communities were filled with middle-class suburbanites and returning troops, with expansion occurring outside of the central cities in places like Levittown, towns largely dependent on private automobiles (Jackson, 1985, 2009). These places were designed to keep order, peace and, most of the time to keep races and classes apart. Gradually, however, with gains in the realm of scientific understanding and bacteriology, a new biomedical approach emerged.

With scientific shift, this shifted the understanding of disease away from the previous conceptions of the filth and germ theory to that of molecular pathogens and related risk factors brought on by lifestyles, behaviors, or inherited traits (Susser and Susser, 1996). With this transition the underlying assumptions of physical and social determinism took new shape. New urban design schemes such as the neighborhood unit and urban renewal efforts attempted to create guidelines for healthy neighborhood environments and healthy place-making, biased by racial, sexual and/or socio-economic assumptions, some of the reflections of which are seen in today’s design philosophies and debates such as those regarding immigration or sexual orientation.

With specific prescriptions for neighborhood design the American Public Health Association’s Committee on the Hygiene of Housing, issued risk-reducing guidance for neighborhood planning (APHA 1948) and Clarence Perry provided very specific design schemes for the ideal “neighborhood unit” that included a single family array of homes over 160 acres of land and accommodating 5000–6000 individuals (Perry, 1929a, 1929b; Silver, 1985).

Perry assumed that, there are several ways in which this scheme may have significance for community organization. In the first place it illustrates a method of producing homogeneity. When the real estate plan is dangled before the public, automatically it draws together a group of people of similar living standards and similar economic ability to realize them (Perry, 1929b, pp. 99).

Perry believed that “the segregation of a city population along racial, economic, social and vocational lines” is a normal process and one which is constantly at work and that, “The use of a neighborhood formula in suburban building and slum rebuilding schemes... (would) promote this grouping process.” This is a theory that modernists such as Corbusier may have viewed with disdain. Corbusier tried to plan simple, open, socialist

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