

Health In Relationship to Landscape Architecture

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**To what extent does Landscape Architecture in inner cities impact the mental
and physical health of citizens that live near it?**

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I. Introduction

Landscape Architecture is defined as the design of outdoor spaces, most commonly through parks and gardens in relationship to the area around it. Landscape architecture is most commonly seen and noticed in cities, where the lack of natural environment brings attention to the few places that do have elements of the natural environment incorporated into them. A park or garden that exhibits good landscape architecture should be a place that seems inviting to its users, has high visibility, and is well lit, which promotes the safety of users. While some of these criteria can be varied slightly and more elements could be added to this list, these are the three key things that truly make a good outdoor space for users to enjoy. The inverse of this would be poor landscape architecture which doesn't meet any of these criteria and is also impractical to use, especially when considering people with physical disabilities and a lack of accessibility. While landscape architecture can also extend out to the design of golf courses and other more suburban / rural disciplines, this paper specifically focuses only on landscape architecture in the inner city, where the limited natural space can have a very important impact on the people that live near it.

Mental health and physical health are both very important topics to focus on when talking about the impact they each have on every single individual. While physical health is more well understood by the average person and is easier to quantify, mental health is less well known but arguably just as important to the human body. Mental health is defined as someone's emotional and psychological well being or in other words, the health of someone's mind. There are many ways to measure someone's mental health just like there are ways to measure their physical health, but these are often self-reported. When talking about anxiety and depression, which are both factors that contribute to poor mental health, it is important to note that measuring the

self-reported amounts of anxiety or depression that someone feels are subjective. However, this doesn't necessarily mean that the data collected can't be used to draw conclusions about the study that it conducts. This paper will focus specifically on mental and physical health in relationship to landscape architecture; specifically focusing on the different tools used and outcomes produced through good landscape design in inner cities.

II. How Landscape Architecture Impacts Mental Health

Whether considering long hikes at a national park or even just something as simple as a walk around the block of a house, it is clear that simply being outdoors has a positive impact on a person's mental health. This is why phrases such as 'getting a breath of fresh air' exist, because even though a person may not have any evidence to back it up, being outdoors has the effect of making a person feel rejuvenated and likely also helps to improve their mood in the moment and their mental health in the long term. However, this feeling a person feels after being outdoors and in nature, even for just a short period of time, does not just happen by some random chance; but rather there is scientific evidence that shows a link between spending time outdoors and being in nature, and an overall better mental health. As more and more people move from rural areas into cities, the question then becomes: How will people be able to access nature in order to gain its positive mental health benefits? The answer to this question lies in landscape architecture and its ability to bring natural spaces into cities that lack them.

In order to fully answer this question, the first thing that needs to be addressed is the actual mental health benefits associated with being in nature. According to researcher and ecologist Danielle Shanahan, these benefits include "[Improved] self-perceived general health, reduced stress, ... improved self-reported well-being and a reduced risk of poor mental health"

(Shanahan 470). This quote demonstrates the wide variety of benefits to mental health that nature can provide, though it does not show the time needed to achieve these benefits or even why it is important to bring these spaces into cities. Although at first thought, it seems like more time spent outdoors would correlate directly with more and more mental health benefits for the longer the period outdoors. For many people, their justification for not spending time outdoors is that they are too busy in their day to day lives to spend an hour or more in nature. However, in a study conducted in 2010 by researchers Jo Barton and Jules Pretty on the best dose of nature for an improved mental health, they “found that five minutes of green exercise resulted in a greater rate of improvement in feelings of restoration and self-esteem than a full day of exposure” (Shanahan 480). This directly refutes the claim that people may be too busy in their day to day lives to spend time in nature because it shows that even a small time such as 5 minutes of exposure can be beneficial to a person’s mental health. This means that it is possible to achieve this very minimal threshold through landscape architecture in cities because of the designated area that is given to the production of these spaces that will have a profound impact on the lives of the people that live and work near it. One other key factor outside of the time commitment that contributes heavily to the lack of nature that people experience in their everyday lives is due to the lack of proximity to nature. When living in the inner city, it is not possible to step outside and be in the middle of some oasis or national park that one might drive a long distance to get to. Instead, when someone steps outside they are greeted with a concrete jungle of sorts, which will not have the same positive mental health effects that actual nature has. Therefore it is also important to consider how easy it is to access these natural areas that landscape architecture provides. Whilst conducting his own research for his doctoral thesis, Ulrika A. Stigsdotter was given access to a database that contained surveys on how people used urban green spaces around

them from nearly 1000 randomly selected individuals. When analyzing this data, he found that “after a distance of 50 meters from home is exceeded, the length of visits decreases and the frequency of stress occasions increases” (Stigsdotter 24). This data not only shows how lack of access is directly related to an increased amount of stress, but also the relationship between proximity and length of visits. This relationship between length of visits and proximity likely happens because the travel time to get to an area with nature is cut out, leaving more time for the person to spend in nature instead of traveling to and from it. This quote also refutes the claim that green spaces are not needed in cities because they exist outside of cities in the suburbs and rural areas, which is overall a redundant claim because it limits the accessibility to these spaces. Being realistic however, unless a person lives right next to a park, a distance of 50 meters is relatively unachievable. The goal with landscape architecture should be to provide these spaces within a reasonable walking distance to everybody because of the link between proximity and decreased levels of stress.

III. How Landscape Architecture Impacts Physical Health

As established by Section II, there is a clear link between landscape architecture and mental health; but this also leads to the establishing of a link between landscape architecture and physical health. While it may be obvious to most people that there is a clear link between exercise and physical health, the ways in which landscape architecture affects physical health extend way beyond that. This section will outline how landscape architecture can have a positive effect on physical health, improving people’s everyday lives in subtle and substantial ways. As Stigsdotter puts it, “In planning housing projects, we may view areas of greenery surrounding buildings in a new light, not merely as aesthetically attractive elements, but also as

health-promoting elements” (Stigsdotter 25). As this quote points out, there is a preconceived notion that landscape architecture only has a purely aesthetic purpose; that it is only utilized to make an area look better. This preconception makes sense, as generally the more trees and public outdoor space that exists in a neighborhood, the better it looks. However what people must realize is that outdoor spaces can be utilized as tools to help increase public health through its design.

The first way that landscape architecture in inner cities goes beyond the scope of just increasing physical health through exercise is through the reduction of the urban heat island effect. The urban heat island effect is defined as urban areas being measurably hotter than surrounding rural areas, despite the fact that there is no variation in the weather. This phenomenon is due to the fact that urban areas are disproportionately covered in a majority of hard surfaces which, instead of absorbing the heat from the sunlight like trees, actually reflect it back into the air, making the surrounding area significantly hotter. This relates directly to landscape architecture because the more trees and vegetation cover, the less of an effect that the urban heat island can create. This is pointed out in a study by Perry J. Hardin and Ryan R. Jensen in a study on ‘the effect of urban leaf area on summertime urban surface kinetic temperatures’. In this study, they found that “increased vegetation cover is considered an important strategy for reducing the urban heat island effect (Hardin and Jensen 2007, O’Neill et al. 2009) because it provides shade and reduces temperatures through evapotranspiration and heat reflection” (Shanahan 480). Through planning and design, landscape architecture can mitigate the urban heat island effect by effectively providing spaces where green cover is utilized for that exact purpose. The only real reason that the urban heat island effect is a problem is because not enough areas exist in cities to absorb the heat and mitigate its effects. Therefore well designed landscape

architecture can be used in this way to provide healthier and happier lives to the people that live near it. One may think that the urban heat island effect may not pose any actual threats to human life, however that is very far from the truth. Heat related illnesses such as heat exhaustion, dehydration and heat strokes can all be caused by the urban heat island effect and present a very serious threat to human life. A study by Drew A. Graham (et al.) found that “areas with lower tree canopy cover proportions and a higher percentage of hard surfaces corresponded to higher numbers of EMS calls—up to five times higher for areas with very low amounts (under 5%) of canopy cover” (Brown, Corry). This quote shows how important something as simple as tree cover can have a direct impact on human health and the ways in which people experience the urban heat island effect. If the goal is to decrease the risk of heat related illnesses for people that live in inner cities, then it is important that landscape architects are intentional with bringing green space and tree cover to cities in order to better the health of the population.

The amazing thing about landscape architecture is that it does not only benefit a certain demographic of people. Its use in cities benefits the entire population that has access to it, whether directly or indirectly. The way that landscape architecture is integrated into inner cities can be the difference between living a healthy and an unhealthy life. In his doctoral thesis, Stigsdotter puts it this way: “If the goal of society is better health on equal terms for all city dwellers, then it would seem fruitful to invest in urban green spaces as a tool in achieving this public health goal” (Stigsdotter 24). In the surveys referenced earlier that Stigsdotter was given access to as part of his doctoral thesis, the surveyors collected background information about the clientele that they were surveying. What they found was that regardless of gender, age, or ethnicity, landscape architecture and the things that come from it equally benefit everyone. This is what the quote above is trying to demonstrate; if cities want to see a positive change for

people's physical health as well as mental health, it is necessary for them to use landscape architecture as a way to access that positive change. This conclusion that landscape architecture and urban green space is necessary for promoting human health is not secluded to just one study however. In a study by Richard Mitchell and Frank Popham on the effects of exposure to nature in relation to health inequalities, they "found lower rates of mortality from cardiovascular disease and all-cause mortality in neighborhoods with higher levels of green space" (Shanahan 479). This quote gives a concrete study into how the amount of green space can directly impact the human health of the people that live near it, revealing an overall positive correlation between the amount of green space and living a healthier life.

IV. Methods Used by Landscape Architects

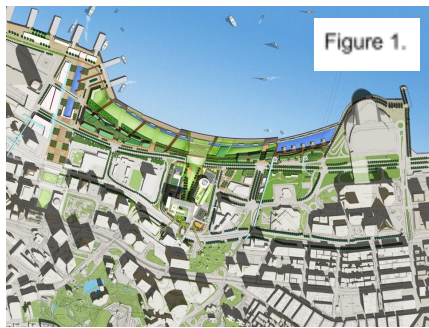
As covered in sections II and III there are many ways in which landscape architecture can impact mental and physical health. However, one thing that still has yet to be covered, is the ways in which landscape architects accomplish designs that benefit both mental and physical health. It is important to first understand which ways to design a space in order for the people to utilize its benefits in the most efficient way possible. As researcher and ecologist Danielle Shanahan puts it, "The role of green space and pleasant scenery in promoting physical activity is becoming increasingly recognized in policy, yet there is still minimal knowledge about optimal design of the natural components of urban green spaces for this purpose." (Shanahan 471). Cities around the world are now starting to realize the positive benefits that green spaces and nature can have on people, yet they lack the knowledge of what or how to do it; this is where landscape architects come in. A landscape architect has the resources and the knowledge necessary to be able to convey the mental and physical health benefits through their designs. This section will

describe the ways in which landscape architecture has evolved to consider its effects beyond just making an outdoor space look good, and the success that they have when it is successfully implemented.

There are many different ways to go about including mental and physical health into the designs of outdoor spaces. The main and most impactful way that landscape architects can make sure that their designs address both the ways in which they can help physical and mental health, is through evidence based landscape architecture or EBLA for short. According to Robert D. Brown and Robert C. Corry, EBLA is “the deliberate and explicit use of scholarly evidence in making decisions about the use and shaping of land” (Brown, Corry). As shown by this quote, instead of a landscape architect just making a choice based on what they think would be best for the design, EBLA challenges the landscape architect to consider outside sources as evidence in order to make an educated and informed decision on the design. This is beneficial because it means that a landscape architect can base their decisions off of the successes or failures of previous designs and use that information as a way to constantly improve. Elise Fagan, in her Master of Landscape Architecture Thesis, highlights that “Landscape architects utilize evidence in two main ways: 1) to aid in making and justifying informed design decisions during the design process, and 2) to demonstrate the performance of built work” (Fagan 13). As shown by this quote, it is important for landscape architects to use evidence as a way to back up the choices being made about the design so that it is not just whatever the person feels like designing, but rather an informed and intentional decision.

During the research process for this paper, I had the opportunity to interview Jeff Davis, a landscape architect whom I was able to interview over a video call. Jeff Davis works for the architecture, engineering and design firm HOK as the leader of the planning, urban design and

landscape architecture studio in St. Louis. Since joining HOK over 31 years ago in 1993, he has worked on hundreds of projects ranging from as small as a public park to as big as region planning projects. One project that he highlighted during the interview specifically, as an example of a design where he had to consider the physical and mental health of a population, was the Tamar Government Complex in Hong Kong, China. The government building itself was designed by architect Rocco Yim while the public park that goes under the building and out to



the lakefront was designed by Jeff (See Figures 1-3).

When talking about the intent behind the design, he states “What we were trying to do there was to send a message to the general public, the population, that the government is accessible and [people] can come here and recreate and be outside, but also in times of unrest, ... It was a place in which people could protest and have their voices heard” (Davis). As Jeff mentions, the whole park is meant to show that the government in Hong Kong is very accessible to the public and this sentiment is also expressed by both Rocco Kim and the Hong Kong government. By giving the population a place where they can have access to around 180,000 square feet of green space, it has the very obvious effect of promoting physical activity in a downtown urban center, giving access to nature for thousands of people daily. However an effect of this space, and specifically its connection to the government, that is highlighted by Jeff is that it gives people a space to

protest and have their voice heard. This is a mental health benefit to the population of Hong Kong because it provides them public land to express their opinions and beliefs.

Another example that shows the impact of the design of a space can have on the people that use it is shown in a study done by Run Li in Qijing, China on “The Influence of Landscape Architecture Design on Residents’ Behavior and Psychology” (Li). This study involved two groups of 50 randomly selected individuals from two separate residential apartments, one being the control group and one being the research group. Each of the 50 people were surveyed one before any landscape architecture existed and one month after the addition of landscape architecture was completed. The only difference between the two groups was that the control group used the usual design of an outdoor residential space whereas the research group used an improved design using behavioral psychology. The results of this study are shown below in Table 1.

Table 1. Anxiety level of residents in the two communities

Group	n	Time		t	P
		Before completion	After completion		
Research group	50	68.4±10.9	52.1±6.3	7.654	0.000
Control group	50	69.5±11.3	61.3±8.2	4.125	0.023
t	-	0.258	5.732	-	-
P	-	0.862	0.013	-	-

As shown by the data given, although both groups of residents saw a decrease in the anxiety level after the completion of the outdoor residential space, the research group or the group that used an improved design had a significantly greater decrease in the levels of stress in the community, despite both groups starting at relatively the same level. This data shows how there is a direct correlation between the design of an outdoor space and its effectiveness when considering mental health benefits. Therefore it is important for landscape architects to take each design into careful consideration and not just use a one-design fits all method.

V. Challenges For The Implementation of Landscape Architecture in Cities

In an ideal world, landscape architecture could be utilized in the ways highlighted in this paper in order to benefit both physical and mental health. However, what is often the reality in major cities, specifically in the US, is that landscape architecture is rarely utilized or oftentimes not utilized to its full potential due to multiple factors. These factors include minimum parking requirements, being undervalued by developers, and budget constraints.

The first of these challenges, minimum parking requirements, is most prominently seen in major cities all across the United States. Minimum parking requirements were developed in the early 20th century, starting in 1923 where the first minimum parking requirement was established in Columbus, Ohio. Since then, minimum parking requirement codes have been largely unaltered, leaving city centers with an excess of surface level parking lots that remain empty on most days. Not only do these giant, often vacant, parking lots create an eyesore for anyone passing by, they also take up a large percentage of city centers. As the Parking Reform Network highlights, “In the city centers of core cities with urbanized areas with over 500 thousand people, the median percentage of land dedicated solely to parking was 26%” (Montanez). Since this 26% of land is taken up by parking lots, it can prohibit the development of public parks and public spaces that could have incorporated landscape architecture, leaving most cities to have a lack of green space in their city centers. If minimum parking requirements were abolished, future development could use the space that was once taken up by a desolate parking lot, and make it into something that actually benefits the population of the city.

Another key challenge is being undervalued by developers, ultimately leading to budget constraints. It is easy to see the appeal that a company sees in a brand new office building

downtown, it gives the company brand recognition and a place for employees to work, both of which create monetary gain for the company. However, what often goes unrecognized is the space around the building, which doesn't give any monetary gain to the company and ends up costing more during the construction of the building. What a member of the Professional Practice Network argues for is "Being valued as a key component to architectural success, and that the budget for landscape-related site projects should be more than 5 percent of building costs." (Martin). The space around a building can play a very important role in the population's mental and physical health (As seen in Section IV). Yet a problem arises when those spaces are underfunded and undervalued by developers. With a limited budget to work with, often only 5 percent the total building cost, a landscape architect may not be able to implement the most effective design to benefit the population, leaving the space underutilized by the people that may have used a nicer outdoor space.

VI. Conclusions

When considering all of the research done for this project, there have been a few main conclusions drawn from the sections of this essay. One is that landscape architecture can have tremendous benefits on both mental and physical health in the inner city. Although most cities are not where they need to be in terms of both the amount and accessibility of outdoor spaces in the inner city, even the most basic outdoor spaces can have many mental and physical health benefits. The goal then becomes bringing more of these spaces into cities, which could be accomplished through careful planning, as well as getting rid of a few of the massive parking lots that populate most downtown areas. Unlike parking lots, urban outdoor greenery and public parks actually make the city look better as well as give benefits to the users that a parking lot could never. Another conclusion drawn from this research is that the design is just as important

as the quantity. Although any urban green space provided through landscape architecture is going to be beneficial in one way or another, if spaces are not utilized or made to be the best version through things like EBLA, there is a missed opportunity for a better looking and a better feeling park. Overall, landscape architecture needs to be utilized as a tool to create outdoor spaces that benefit a person's mental and physical health through its design.

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