

ABSTRACT

Title of Thesis: DESIGNING HAPPINESS: ARCHITECTURE
AND URBAN DESIGN FOR JOY AND
WELL-BEING

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Master of Community Planning 2016

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Scientific studies exploring the environmental and experiential elements that help boost human happiness have become a significant and expanding body of work. Some urban designers, architects and planners are looking to apply this knowledge through policy decisions and design, but there is a great deal of room for further study and exploration. This paper looks at definitions of happiness and happiness measurements used in research. The paper goes on to introduce six environmental factors identified in a literature review that have design implications relating to happiness: Nature, Light, Surprise, Access, Identity, and Sociality. Architectural precedents are examined and design strategies are proposed for each factor, which are then applied to a test case site and building in Baltimore, Maryland. It is anticipated that these factors and strategies will be useful to architects, urban designers and planners as they endeavor to design positive user experiences and set city shaping policy.

DESIGNING HAPPINESS: ARCHITECTURE AND URBAN DESIGN FOR JOY
AND WELL-BEING

by

Rebecca Habtour

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University of Maryland, College Park, in partial fulfillment
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Preface

I entered into this work with the intention of doing a fun thesis topic, but it turned out to be quite a challenge. There is so much to learn on the topic and relatively few who have ventured into this territory before me. Perhaps not everyone considers happiness a priority, or even a possibility for most people. I put this out there with the hope that some may value that ideal intrinsically, and see real potential for good in reaching for it, and letting it influence our approach to shaping the environments we live in. With development projects so wrapped up in economics and efficiency, it is too often forgotten that we need to balance those to 'e's with more human concerns. I think it is important to note that those ideas aren't necessarily at odds with each other. Compassionate community building solutions can have great economic benefits, and efficiency in productivity can open the possibility of spreading more help to those in need. A policy level pursuit of happiness can help ameliorate some of social ills we are so plagued with, something I didn't realize when I first engaged in this project. My hope is to carry some of this work forward beyond the thesis and help infect more people with the ideas and possibilities of designing for happiness.

Foreword

Everyone needs a place to be.

And everyone needs a place to be happy.

Dedication

To all those who survive the challenging stormy days of life and remember how to smile when the sun comes out again.

Acknowledgements

My advisor, Madlen Simon, is an incredible force for good in this world. She brings positivity and light with her wherever she goes and she brings out the best in all her students. I don't think I could have gotten through this process with any other advisor. She has been so generous with her incredible breadth of knowledge in the work. But I have also learned so much more from her than how to be a better architect. I learned to ask for help, to find new strategies to deal with difficult problems, to view other people with a new perspective, and to work out my differences with others in a positive way. She also offered me so much compassion when I was struggling with the work. She conducts her life in such an exemplary fashion. I really feel proud to just be associated with her.

Each of my committee members were also invaluable. Alex Chen knew exactly when and how to challenge my ideas and the research to get me to be more thoughtful about it, and he also knew when to just give me a pep talk and remind me that no thesis will be perfect but to move forward anyway. James Tilghman always had practical advice for me for connecting my ideas and finding ways to present the work with greater clarity. He also never seemed to be judging me negatively when I brought work to our meetings that I felt wasn't up to par, showing that he could see the potential for the work, even when it was in its ugliest stages. Though I worked less closely with him, Brian Kelly always seemed to have a helpful suggestion in his pocket that gave me an insight or a new approach to some aspect of the problem.

I want to acknowledge my loving spouse who offered hugs, encouragement and shoulder rubs, let me talk through the work with him, was often my study buddy, and

took on a higher share of the mundane work like dishes and laundry so I could focus on the my thesis work, and was always greatly impressed with my product. He also helped me to take those invaluable breaks to go for a walk or play a game of backgammon. Through the stresses of grad school and the upheaval of our lives that took place during this time, we've grown even closer together, and I fallen further in love with the wonderful man I've been so lucky to be connected to.

I'd be remiss if I didn't mention my many classmates who were so kind and helpful a few of which truly embraced me as a friend when I was feeling like a bit of an outsider. Freddo, Dario, Xavier, Michael, Danielle, Sam, & Diane in particular really showed me great kindness and I am truly grateful. I'm looking forward to seeing each of them to succeed brilliantly as they bring their loving hearts and their bright minds out into the profession and into the world.

I also want to acknowledge so many of my other professors who prepared me to enter the gates of thesis and gave me a much broader view of the world. Ambrose who started me off on this journey and gave me my first set of problem solving tools. Koliji who opened my eyes to the poetry of space. Mortensen who gave such grounded and practical instruction. DuPuy who allowed me to see the world through his eyes and took me on an unforgettable journey. His ability to see and unfold the mysteries of the city and the secrets of great architecture truly blows my mind and I admire his energy and approach to life hugely. Cohen who humbled me by opening my eyes to so many things I didn't know I didn't know. Marie Howland for giving me the chance to experience Russia, and for making economics a really enjoyable subject and for just being an incredibly kind and intelligent woman. Gourney for

introducing me to so much wonderful architecture of the past, and for being an exemplary feminist in a faculty with a bit of machismo. Luis Quiros for creating challenges that brought me important breakthroughs in my understanding and perspective of several important issues both globally and architecturally. He gave me so much respect and admiration for the person he is and the brilliance he shares. And to every other professor who shared with me their knowledge and tried to help me build my abilities, I am grateful for the work you do.

How fortunate I have been to be surrounded with such positivity! It makes me feel as though a life of happiness really is attainable.

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Chapter 1: Thesis Question

How can an architect increase happiness through design

Need for Intervention

America has experienced a great overall boost in wealth since the 1960s, but despite the belief by many theorists that greater income should lead to greater happiness, that growth in wealth has not partnered with an equivalent growth in happiness. We consume more, throw away more, live in bigger houses, drive and fly further and faster than ever before, at the same time we trust our neighbors less, grow heavier and less healthy, spend more time working and commuting, and emotionally run the hedonic treadmill, continually reaching for the greater wealth we see in other people's spending, regardless of our own increases in material gain.

The US traditionally measures overall health with the gross domestic product, but as a measure it does not capture the emotional well-being of the nation, it does not concern itself with equity issues, nor is it a sustainable model for the long term health of our planet. Happiness is becoming a topic of conversation internationally as a potentially better measure of national progress. The country of Bhutan has already implemented a Gross Domestic Happiness policy.¹

¹ Helliwell, John, Richard Layard, and Jeffrey Sachs. *World Happiness Report*. Sustainable Development Solutions Network (SDSN), 2014. p.133

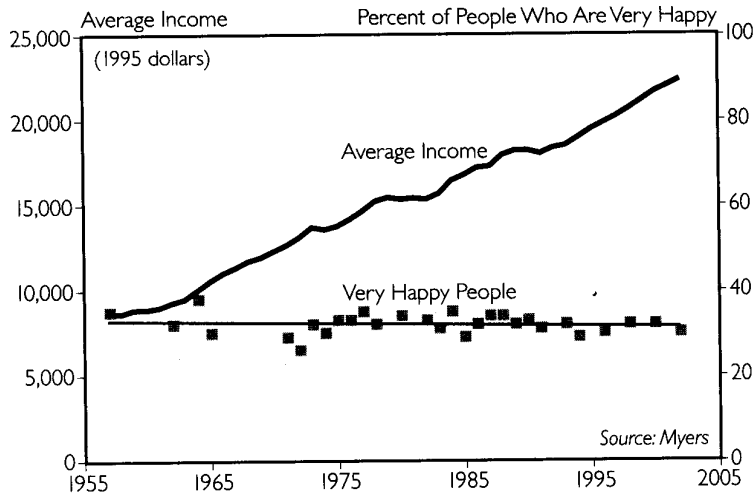
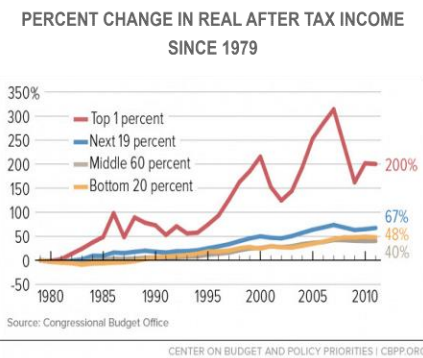


Figure 8-1. Average Income and Happiness in the United States, 1957-2002

Figure 1 Source: Speth, James Gustave. 2008. *Bridge at the edge of the world*. New Haven, CT, USA: Yale University Press. Page 132.

Economists trying to understand the gap between material and emotional wealth in America have concluded that the increasing wealth gap, and the hedonic treadmill, where our happiness resets after we've become accustomed to a new acquisition, only partly explain the issue. It turns out that much of our happiness or unhappiness can be attributed to the environments in which we live. ²



ECONOMISTS HAVE CONCLUDED THAT THE HEDONIC TREADMILL AND THE INCREASING WEALTH GAP ONLY PARTIALLY EXPLAIN THE WIDENING GAP BETWEEN MATERIAL AND EMOTIONAL WEALTH

Figure 2 Increasing wealth gap chart created with data from the Congressional Budget Office. Treadmill Icon by Samy Menai from the Noun Project

² Montgomery, Charles. *Happy City; Transforming our lives through urban design*. New York: Farrar, Straus and Giroux, 2013 p.11

Brereton's research, using a micro-econometric happiness function that indexes variables found to influence individual life satisfaction, such as employment, health, income and marital status, and so on, then used GIS data to combining the individual data with the spatial variables: population density, congestion, commuting time, precipitation, wind speed, temperature, hours of sunshine and proximity to landfills, hazardous waste facilities, coastlines, beaches, rail stations and airports. Geography and the environment have a much larger influence on well-being than previously thought, as important as the most critical socio-economic and socio-demographic factors, such as unemployment and marital status.³

Growth in American wealth since the 1960s has reshaped our cities. Expansive oversimplified ideals of flowing expressways and sterilized urban mega-block developments have flattened human scaled urban communities and have widened segregation between divergent demographics. The pursuit of suburban garden enclaves and big box store super savings, as well as the promise of a better school and safer neighborhood, have emptied city cores and expanded environmental, infrastructure, and road costs, as well as the number of expletives exhaled from behind steering wheels, exponentially.

³ Brereton, Finbarr et.al. "Happiness, geography and the environment." *Ecological Economics*, 2008: 386-396.

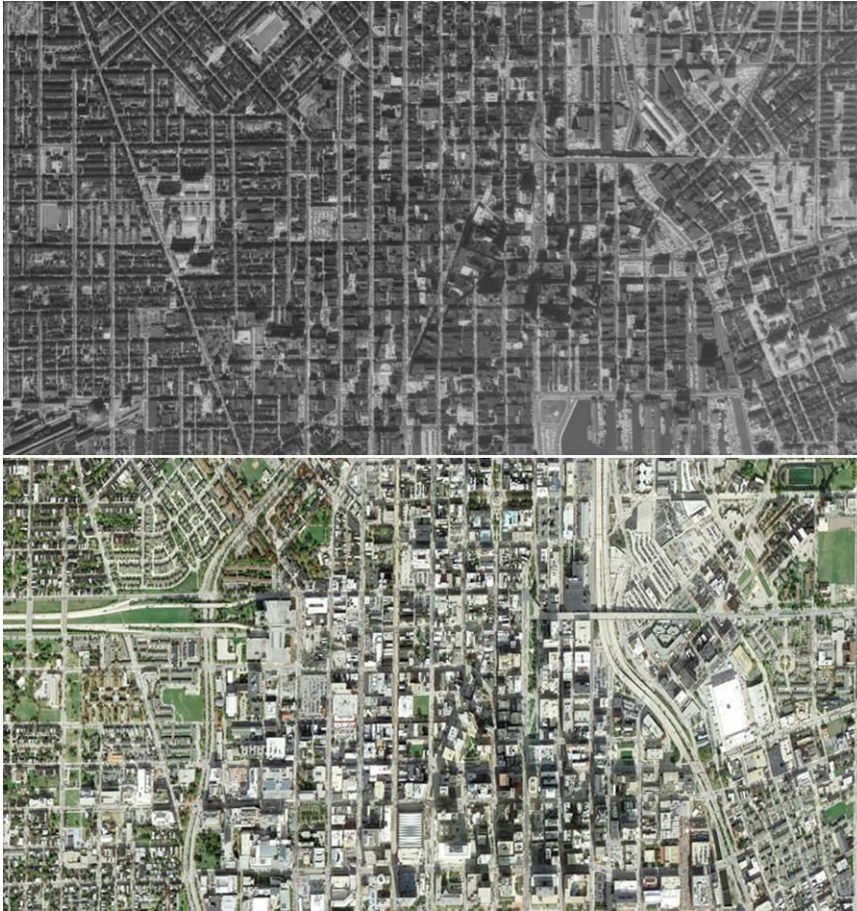


Figure 3 Baltimore 1959 to 2015
Hampton, Shane. "60 Years of Urban Change." Digital image. Institute for Quality Communities - OU. January 21, 2015. Accessed November 2015. <http://iqc.ou.edu/2015/01/21/60yrsnortheast/>, Map data ©2015 Google

Urban renewal scars cutting through downtown Baltimore appear in these comparative aerial views one from 1959, the other from 2015, including Rt-40, known locally as the 'highway to nowhere' and Martin Luther King Blvd to the West, the Jones Falls expressway covering the Jones Falls river to the east. More than 25,000 people 85% African American were displaced through urban renewal in Baltimore during the second half of the 20th Century.⁴

American downtowns have crumbled as their streets turned into noisy high speed expressways to accommodate suburban commuters that do little to support the

⁴ Hampton, Shane. *60 Years of Urban Change: Northeast*. Blog, Norman, OK: Institute for Quality Communities, University of Oklahoma, 2015.

infrastructure they require. Pedestrian deaths skyrocket. Inner city opportunity shrivels for the poor left behind under generations of downtown disinvestment, leading to flourishing illegal industries that break families apart with imprisonment, disease, and exhaustion.



Figure 4 Protests over Freddie Gray's death at the hands of Baltimore Police. Distrust between citizens and police are strongly linked to community disinvestment. Photo Reuters.

Frustrated suburban commuters, and opportunistic investors look back to downtown living, and reinvestment comes in the form of wealthy enclaves, often subsidized by governments desperate to stave off continual decline. Butting up against this wealth, inner city poverty grows even more stark by contrast. The wealthy distrust and fear their poor neighbors and push for harsher law enforcement crack downs as they barricade themselves into gated fortresses. Poor communities feel unwelcome and watch their older homes get incrementally eaten up by luxury rehabs, and wholesale demolition of the historic fabric and character. Local businesses get replaced by cookie-cutter national chains able to pay the increasing rents.



Figure 5 Governor Hogan's \$700 million Urban Renewal Plan demolishes Baltimore row homes in an effort to reduce crime, but includes no funds for rebuilding communities, Baltimore 2016, photo AP.

Affordable living disappears. Disadvantaged communities are increasingly displaced and shifted further to the periphery, becoming isolated even further from opportunity and hope, not able to afford the cars that shaped those now aging first wave suburban communities. Many are force to take multi-hour bus commutes to downtown low-wage jobs. Middle class suburbanites flee further outwards to escape the inner city problems that migrate to their communities. This process is happening in Baltimore right now. But the city is still at a point where it can make smarter choices for the future and plan for a happier city.

Our lives are shaped by the shapes in which we live our lives.

The importance of happiness and wellbeing recently prompted French President Nicholas Sarkozy to lead a reexamination of the way nations measure success by

commissioning a panel of top economists, including Nobel laureates Joseph Stiglitz and Amartya Sen. That report urges that countries consider a broad range of measures of social well-being that go far beyond traditional economic measures such as the Gross Domestic Product.⁵ These ideas should not be thought of as the domain of countries like France or Bhutan. The idea of enabling the “pursuit of happiness” is intertwined with the foundation of the American republic⁶ and should be considered as a policy, and design priority.

⁵ Stiglitz, Joseph, Amartya Sen, and Jean-Paul Fitoussi. *Report by the Commission on the Measurement of Economic Performance and Social Progress*. Government, Paris, France: French Government, 2009.

⁶ Murrin, John M, and Pauline Maier. "American Scripture: Making the Declaration of Independence." *The Journal of Southern History*, 1999: 104.

Role of the Architect, Urban Design & Planner

Once a person's basic and psychological needs are generally met such as food, shelter, safety, as represented in the base of Maslow's Hierarchy of needs, happiness no longer increases with increases in wealth or material goods. A person may get a temporary boost in happiness when they get a new dress or a bigger TV or a temporary drop in happiness when they've sustained an injury or lost a pet, but then that person returns to a baseline level of happiness and resets the level of expectation. In order to get another temporary boost in happiness, the person will need something bigger and better, never permanently boosting baseline happiness overall. This is referred to as the Hedonic Treadmill or adaptation. However, there are things that have been shown through research to boost the happiness baseline in the long term.

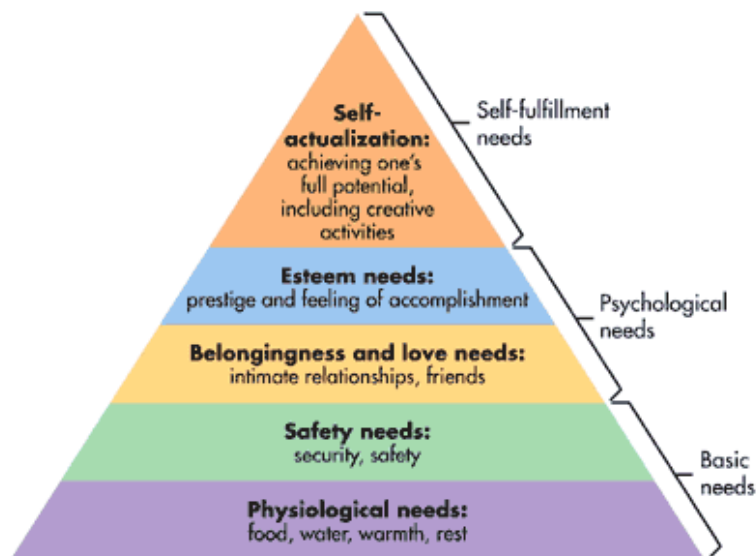


Figure 6 Maslow's hierarchy of need. Digital image. Teachnology. Accessed November 2015. <http://www.teachnology.com/tutorials/teaching/whatareneeds.html>.

One of these things, represented in Maslow's psychological needs, is the particular significance of positive relationships and social connections. Another one of these

things, not represented in Maslow's hierarchy, is the long-term positive effect of living in a beautiful nature-connected environment.

Design Implications

A lasting change in happiness can only be met by an ongoing change in a person's life. Two areas have shown to have a lasting overall boost to happiness:

1) a committed long term relationship



2) a beautiful nature-connected living environment

This highlights the potential for spaces designed to enhance social interaction as well as those which enhance human connection to the natural world.

Figure 7 Happiness has an "interactive" relationship component and a "restorative" nature connected component. Illustrations by Rebecca Haptour

These exceptions to the hedonic treadmill present interesting design implications.

Enhancing the human connection to the natural world by integrating nature more holistically into our urban areas also may be able to boost many people's day to day happiness levels.

The idea that politics should enable "the good life" has a foundation in Aristotle, who expressed that politics should aim at producing *eudaimonia* or happiness. The "best form of government," Aristotle famously argued, "is that under which the body politic is happiest".⁷

⁷ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

Social connections within the city, aspects of city planning, and the maintenance of the public sphere are associated with individual happiness. There are aspects of the city that people do care about such as access to the arts and entertainment, and surprisingly, a good public transportation system. The aesthetics of the city and issues related to the rearing of children are also important for happiness, universally.⁸ A verdant urban park can be a moment of emotional restoration in a hot concrete city. A beautiful room can improve the way an individual self-reports their overall well-being. Studies utilizing the current science of happiness to better identify and understand how to create architecture and define urban spaces specifically for happiness are currently limited. Until the designed environment's connection to happiness is better understood, opportunities for improving people's lives will be missed. Architects, urban designers and planners are vital to the pursuit of happiness.



**THE ENVIRONMENTS IN WHICH WE LIVE ARE IDENTIFIED BY RESEARCHERS AS HAVING
A SIGNIFICANT IMPACT ON OUR HAPPINESS**

ENTER THE ARCHITECT, URBAN DESIGNER, & PLANNER

Figure 8 Illustration by Rebecca Habtour

⁸ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

Chapter 2: Methodology

Overview

The research question was approached with a broad literature review, looking at published work in neuroscience, psychology, environmental psychology, economics, and urban and architectural studies. An informal online survey was then conducted to get a more qualitative understanding of the literature findings. Environmental factors with urban and architectural design implications were identified and then used to determine program and site selection for the test case study. The factors identified included: Nature, Light, Surprise, Access, Identity & Sociality.

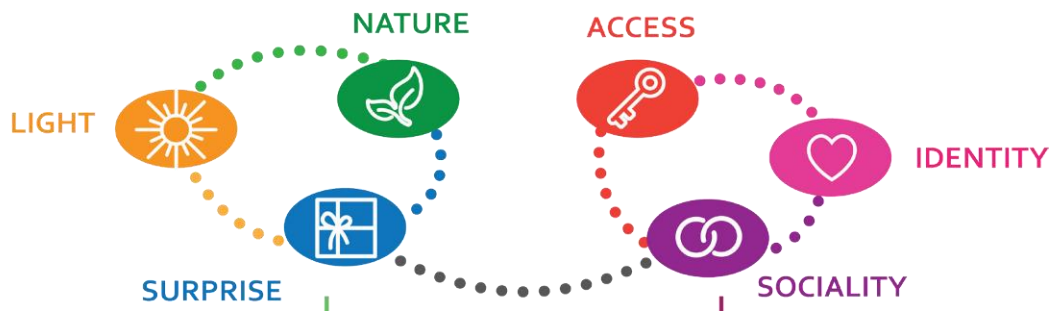


Figure 9 Environmental factors with potential design implications identified in the literature review. Image by Rebecca Habtour

Survey

63 people participated in an informal survey which asked each to describe a place that makes them happy. The surveys reinforced much of the content in the literature review. Answers about activities and the natural and material qualities of these places were utilized to inform the selected program for the architectural test case.

Of the 63 respondents, the majority were college educated, Caucasian, Females between 25-44. There were no respondents under 18, or that identified as Asian, or that identified as having only a high school education or less.

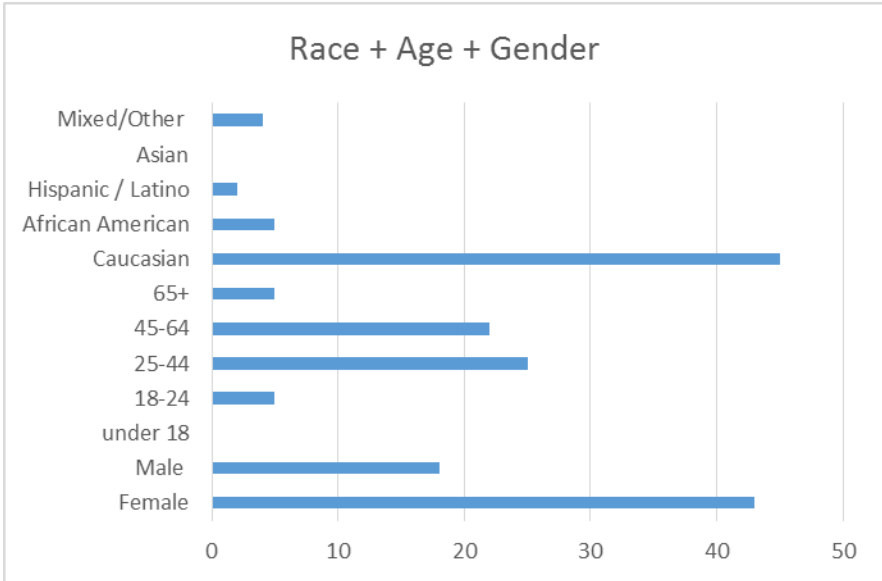


Figure 10 Demographics from Survey

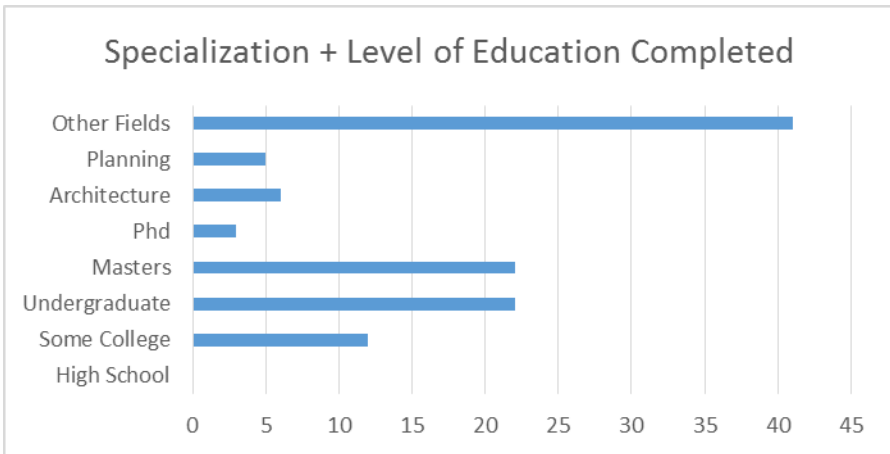


Figure 11 Education from Survey

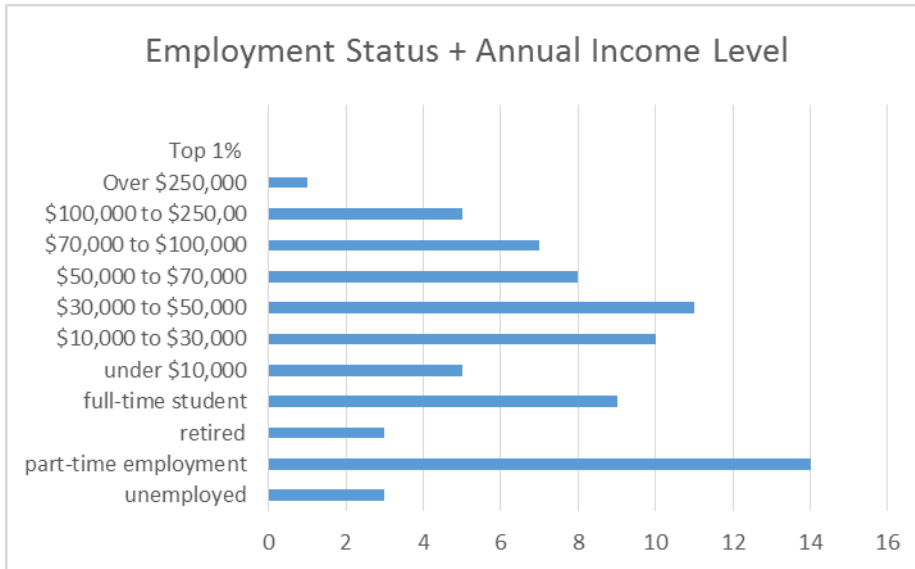


Figure 12 Employment & Income from Survey

The following questions were asked of the respondents:

1. Name a real place that makes you happy when you go there.
2. If you named a country, city, or neighborhood, please select and name a specific place within that country, city, or neighborhood where you can describe details about the environment and experience.
3. What kind of place is it?
4. What does it look like? Feel like? Sound like? Smell like?
5. Is it indoors, outdoors or both?
6. What is the weather and climate like?
7. Describe the materials and textures that surround you? And are they man-made, natural, or both combined?
8. What is the light like?
9. What time or times of day is it the most happy? And why?
10. How many and what kind of plants are there, if any? And how many and what kind of

animals or creatures are there, if any? Also, how do you relate in space, distance and relationship to the plants and creatures? For example: Can you touch them or wander near? Is there a window dividing you from them? Does the animal or plant belong to you?

11. How many and how would you describe the people there, if any? If there are people, how do you relate in space, distance and relationship to those people?

12. What kind of activities do you engage in while there?

13. Does it cost money to go there? If so, would you consider it expensive?

14. What makes it a happy place for you?

15. Describe a factor of the environment that you think contributes to it being a happy place.

The respondents answered with detailed descriptions of a specific place they felt made them happy. For example, one responded selected Druid Hill Park in Baltimore, MD and for question 4 gave the following description: “Shimmering water provides a wide viewing distance of towers and townhouses, both projects and apartments. The smell is crisp. Sounds of traffic, basketball games, children and athletes waft in and out as one rounds the lake. The feeling is sublime, and a touch uncanny.”

The responses to the surveys reinforced many of the findings from the literature review. A strong connection to nature appeared frequently, often connected to the ocean or other bodies of water, also views or vistas were often identified. These elements were accompanied with descriptions of feeling peaceful or free. Even when urban or built areas were chosen, natural elements were often called out in the descriptions early on, such as local parks and gardens, street trees, atriums and local

animals. The vast majority of the places described were either outdoors, or had both indoor and outdoor elements.



Figure 13 Google earth images of all the locatable places, grouped into types at matching scales.

Social connections including family, friends and romantic connections were mentioned frequently, and were often partnered with activities such as eating, shopping, people watching, relaxing, walking and a variety of sports and games. Some embraced crowded places with lots of activity, but the most preferred solitude or the company of a relatively few select people. Whether out in nature or in an rural, urban, or suburban environment, there were environments or amenities that gave opportunities for repose, or that facilitated social engagement or both. There were often very strong memories or nostalgic connections associated with specific places. The quality of light, the sounds, and the smells were all significant in triggering those feelings. Most every kind of lighting condition was described, but natural light and its changeable nature was mentioned the most. Daybreak, twilight and nights with very little light pollution to allow the person to see many stars, also seemed particularly honored as very special times of the day. The element of surprise when engaging spaces was called out specifically, but more often a general sense of

To get an immediate sense of how some of survey respondents happy places might work on the chosen site, several were chosen and dropped in the site context to scale. A greenway or formal garden like the Third Creek Greenway or the Brookside Gardens shows the potential for bringing a potentially meaningful piece of nature creating a restorative pedestrian thoroughfare. Harlem and Fleet street in London fit the fabric of what already exists in Baltimore reasonably well and speaks to walkable mixed city programming, but doesn't leave much room for the impact of nature. The Nevada, Hawaii and Utah landscapes seem completely out of place, but do conjure some possibility in the imagination. What impact would a water feature have if it took up $\frac{3}{4}$ of a city block? What if an entire mountain were built with knobby rock features reminiscent of little goblins? What if a flat expanse surrounding temple of respite took over the whole site and created a new center around which to revolve, removing the element of vehicle traffic? The German old town is the one comparison here that seem to offer limited potential. The scale is out of beat with the local texture and relies so heavily on its age and history to give it meaning. To recreate these kinds of elements in a downtown Baltimore context would be very difficult to do with a feeling of authenticity.

Site Selection

Baltimore City

I selected a site in Baltimore for several reasons. In addition to being near and dear to my heart as my current place of residence, it is a city in need of some happiness.

Baltimore is representative of the many problems facing many American urban areas,

like, crime, blight, and the repercussions of disinvestment in many communities. Also, happiness has been studied in Baltimore. One research report indicated that when studying individuals vs. communities, different parameters seem to be the major influence in residents' happiness, for individuals income, for communities social connections, but the environmental condition of those surveyed was consistently impactful regardless of how the surveys were directed. This shows the great potential for really impactful environmental interventions in this city and those like it. Research performed by Vemuri et al. in Baltimore City discovered that when measuring on the individual scale, higher incomes contributed to higher levels of satisfaction, yet social capital did not. On the neighborhood scale, more social capital strongly increased satisfaction, but higher incomes did not. But what is particularly meaningful and relevant to this site and topic is that *access to a clean natural environment always contributed to higher satisfaction, regardless of the scale of analysis.*⁹



Figure 15 Baltimore City map created using data from OpenBaltimore.

⁹ Vemuri, Amanda et al. "A Tale of Two Scales: Evaluating the Relationship Among Life Satisfaction, Social Capital, Income, and the Natural Environment at Individual and Neighborhood Levels in Metropolitan Baltimore." *Environment and Behavior*, 2011: 3-25.

Narrowing the Field

Using themes I identified from the readings, I selected 5 potential Baltimore sites that I then narrowed down to one.



Figure 16 Site Selection Image by Rebecca Habtour

Here is the site. It is near the center of the downtown with the major commercial district to the south and a mix of residential civic and smaller commercial entities to the north. It is at the borderline of the Mt. Vernon, Seton Hill and University Market neighborhoods. Greater site description will be included in within the exploration of key environmental factors.



Figure 17 Site selection. Map Images by Rebecca Habtour using data from OpenBaltimore.

Program

Potential Program Informed by Site

An examination of local amenities already existing on the site, highlighted the great potential for the site to act as a connector and a catalyst for further community involvement and investment. Understanding the amenities already existing within easy walking distance from the site helped eliminate some potential building types that are not needed in this particular community. Amenities already existing within in very short walking distance of the site include libraries, museums, office space, churches of multiple denominations, theater and performance spaces, schools, senior living apartments, restaurants, markets, cafes, gyms and arts organizations. There is market rate and higher income housing to the North and East of the site, lower income and subsidized housing to the South and the West.



Figure 18 Ceremony Coffee's south facing windows look out over the site currently a vacant parking lot. Image by Rebecca Habtour.

The nearest parks are a dog park in the process of being built, Mt Vernon Square framing the Washington Monument, and St. Mary's Park which is a large patch of grass, some trees, and a few benches next to the historic church and Preston Gardens, which is a linear promenade park segmented by several roads. There is a light rail line running through the site North to South.



Figure 19 Howard St Elevation showing from left to right, St James market rate apartments, 3 burned out buildings including the historic Mayfair theater, City College market rate apartments, the future dog park, 2 vacant former commercial buildings. Image by Rebecca Habtour.

Howard street, which the site is on, used to be a popular commercial and entertainment district with several stores as well as historic theaters, including the Mayfair theater facing the site. The Mayfair is currently burned out, but the facade is intact. Although many of the buildings on Howard are currently vacant and blighted, there are some arts organizations moving in, and there are other signs that the street is beginning to attract more tenants. Because of the many valuable amenities on every side of this site, there is a great opportunity for it to become a well-used pedestrian thoroughfare that will may potentially trigger further investment and redevelopment down Howard Street as well as on Franklin.

There are no community centers nearby, and no municipal swimming pools. The only swimming facilities downtown require expensive memberships or building tenancy to access them. There are no community gardens near the site. There is an adjacent girls Catholic high school that doesn't have any outdoor play or sports space. Most of

the young women take public busses home. There are not many after school options for neighborhood youth, nor activities for the local senior communities. There are not any children's play areas nearby. There are very limited dance venues in Baltimore and the only dance studio nearby with classes has a packed schedule. Affordable fitness opportunities are very limited for local low income residents. There are several young professionals and college age residents, including students attending the University of Baltimore, the University of Maryland's Medical Campus and the Maryland Institute College of Art. Many of these young adults actively engage in a variety of social events and many are civically engaged as well. There are very few contexts in which all the different local demographics intermingle.

This encourages the idea of creating a community center that speaks to historic civic pride, but helps facilitate the needs of the modern day. The space should encourage the mixing of social classes, races, and ages, as each have an opportunity to enjoy a stroll around the local gardens, or to attend a jazz concert in a flexible space room, or to learn Kizomba dancing.

Baltimore City is currently looking to capitalize on "Anchor" institutions, like their universities and other large employers to help renew some of their blighted and struggling neighborhoods. These institution's existence alone is not enough to make a significant change to their communities, so the institutions have been encouraged to increase their impact by incentivizing their employees to live nearby and to get involved in community programs. They are also expanding their own physical footprint of investment into blighted areas to encourage additional investment and development. These interventions and investments do encourage economic renewal

in blighted areas over time, justifying state and city contributions to their projects. However this renewal focuses the economic benefit on a relatively small group of developers and property owners and often comes with the added side-effect of displacement. Often these renewed anchor structures in struggling communities are closely guarded and do not grant access nor offer any public benefit to locals. An intervention intended to be an anchor institution, can be overly focused on economics without taking into account the possibility creating more widespread happiness in an existing community. With city and state governments looking to make investments in “Anchor” institutions to act as catalysts for positive change in their communities, there is significance in what kind of projects to support and the objectives behind those interventions. There is a strong argument towards making those interventions have direct public accessibility and benefit.

Analysis of Potential Program by Key Factors

After exploration and brainstorming sessions, a selection of potential programming was measured against factors identified in the literature review as having important environmental implications.



Figure 20 Interacting with nature in the palm house at Druid Hill Park in Baltimore. Image by Rebecca Habtour

Nature: Maximizing connectivity between humans and nature is particularly vital in a dense urban area. Integration of natural elements can be done with any building type, and at many scales. Natural elements can provide a buffer or escape from adjacent street noises, and offer the possibility for both rest and exploration. A biodiversity enriched pedestrian path connecting neighborhood parks can act as a segment of a larger connected greenway. Nature integration recommends unique elements to encourage discovery that go beyond the typical expanses of grass with trees. Lawn mowers can also add undesirable noise levels and are better avoided if possible. Bringing biodiversity into the interior of the building can enhance the everyday experience of occupants. Having a publicly accessible structure replete with plant-life may act as a great oasis in a dense urban area.



Figure 21 Colored glass filtered light experience in the chapel at Mercy Hospital in Baltimore. Image by Rebecca Habtour

Light: Ideally, every space in the building and on the site should have access to natural light of some variety. There should be some places for taking in a lot of sun, like a patio or sun garden, and some places where the light is tempered and filtered to minimize glare and decrease the urban heat island effect. In the middle of downtown Baltimore it will be impossible to spot eliminate light pollution enough to truly take in the full magic of the night sky, and there is a perception that there is a lack of safety in darkness. However, darkness still has a role to play. The program should facilitate some kind of nighttime lighting that will add a soft fascination to the outdoor spaces without flooding the area with light, drawing people to the space and adding a sense of safety in numbers. Perhaps the lighting could be inspired by fireflies.



Figure 22 Small intrepid explorer, nature's small creatures can create a sense of wonder and discovery. Image by Rebecca Hattour

Surprise: The program needs to include elements that transform and surprise. This could be interactive works of art built into the structure or on the exterior, elements in the building that play on the change in light over the course of the day to create a surprising effect, or plantings that draw attention and have something to offer in different seasons. These can take many forms, like wisteria trellis walks, garden labyrinths, play fountains, rocking benches, secret gardens, secret passages, butterfly houses, rock gardens, urban ecosystems, uniquely framed views in surprising places, or a vista over the cityscape. The impact of curvilinear forms and fractal geometry and jumping off points for elegant design elements and moments of contrast can be explored. Stairs and elevators that are attentive to the experience of the promenade and not dungeon like fire stairs and back corner elevators can encourage exploration and discovery. Entries that are welcoming, without a defensive feeling signal to people they may enter and engage. The relationship to the street front is respectful,

holds the urban edge in intimate relationship and engages the person walking by both with transparency and something interesting to look at.



Figure 23 Women gather and chat over shared interests in Druid Hill Park's tropical greenhouse. Image by Rebecca Habtour

Sociality: Facilitating social engagement and creating spaces where relationships can grow and flourish is an important goal of this program. Spaces that facilitate conversation, not too noisy, intimate enough to hold private conversations, but peopled enough to feel both lively and safe. Seating that is flexible or adjustable enough to suit different sized parties and that may increase the potential for positive interaction with strangers, as well as spaces where adults can keep an eye on their playing children. A cafe, cafeteria, restaurant or picnic area would make sense to engage socializing over food and drink, activities that were highlighted by the survey. It will also help to keep the spaces active and feeling safe over the course of the day and into the night. Recreational and arts activities also really encourage social

engagement. Since water seems to play a big role in many people's happy places, including a swimming pool, play fountain or Jacuzzi would make sense.



Figure 24 the Washington Monument in the center of Mt Vernon Place park is an iconic identifier for the Mt. Vernon neighborhood and the entire city of Baltimore that many people feel a strong connection to. Image by Rebecca Habtour

Identity: People build emotional connections to places that help shape their identity.

This becomes the most powerful when they build memories with people they love in those spaces. This can also happen when they find regular respite from their troubles in those spaces. Places that allow people to connect to each other in a meaningful way need to be available and accessible. Places to sit, talk, play, walk, discover, read, smile, kiss, hold hands and connect. There should also be something distinctive about the place. People are less likely to make those emotional connections to places without some element that distinguishes them from their surroundings, or from the expected. People are a little more likely to speak sentimentally about that unique local drive-in burger joint than the ubiquitous drive through McDonalds that is virtually the same in every town. This connection to place can also be built by being

attentive to local culture, including elements complimentary to the context and vernacular, making memorials of local significance and even engaging community members in the creation and care of the spaces themselves. Community engagement can create a sense of ownership and protectiveness that will facilitate a better maintained asset for the long term.



Figure 25 Active street life on Charles St with bus transit, a strong urban edge, a mix of restaurants, retail, entertainment and residential and neighborhood icons. Image by Rebecca Habtour

Access: In an urban context, each happy place is part of the greater whole of its neighborhood, and its city. Office districts that have been allowed to develop in cities without requirements for a good mix of retail, restaurant and residential complements, turn into ghost town at the end of the workday. Communities that have been allowed to backslide until they can no longer afford to support a decent grocery store or bank, will not easily attract the investment needed to keep their infrastructure from falling into disrepair and their communities from struggling under the loss of wealth building opportunities. When an area is growing, positive amenities attract other positive

amenities to them and trigger a positive feedback loop of investment for the community. Unfortunately, market forces will often leave lower income people without access to the enjoyment of those amenities. Those with disabilities often get left behind as well. Good government planning and intervention is needed to invest in making public transit as pleasant and efficient as possible and to keep public parks, libraries, museums, community centers, to make them both attractive and available to everybody. As architects add their contributions to the fabric of the city, they have an opportunity to add to the potential amenities that can serve as a benefit to people across social divides.

Precedent Study

Selection

Precedents were selected for program relationships, functionality, and aesthetic choices that aligned with the 6 environmental factors identified. This is just a small sampling. The illustrations to the right show a few of the structures placed on my selected site, to help me better understand their scale and potential contextual relationship. Selected precedents will be discussed in the test case and strategies. An extended program inventory can be found in appendix 1.

PRECEDENT STUDIES

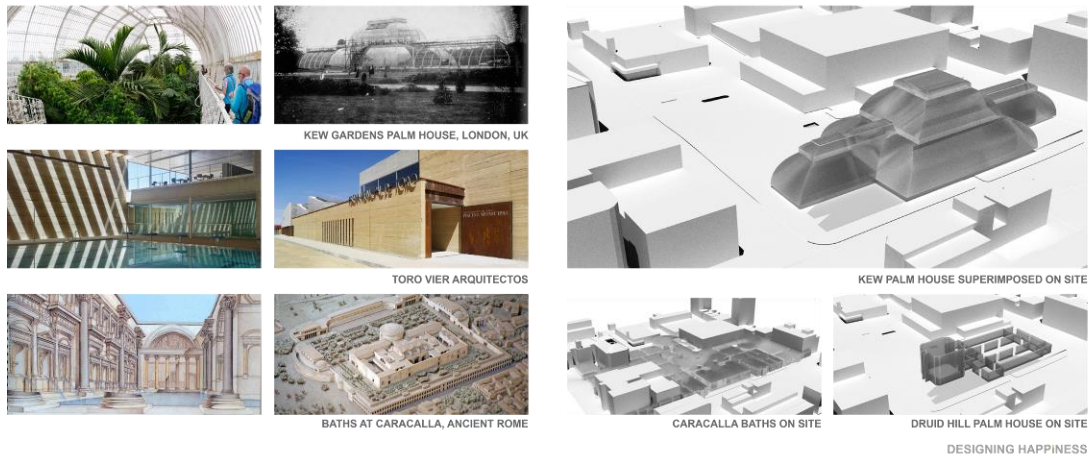


Figure 26 Selection of precedents studied with some digital study models placed on the site. Digital study models by Rebecca Habtour

Chapter 3: Research Findings

Defining Happiness

Introducing Happiness

There are many ways happiness has been defined, but at its most simple form, we each have a personal sense of what it means to be happy. You know it when you have it, and when you don't. Psychologists currently break it down generally into the following categories:

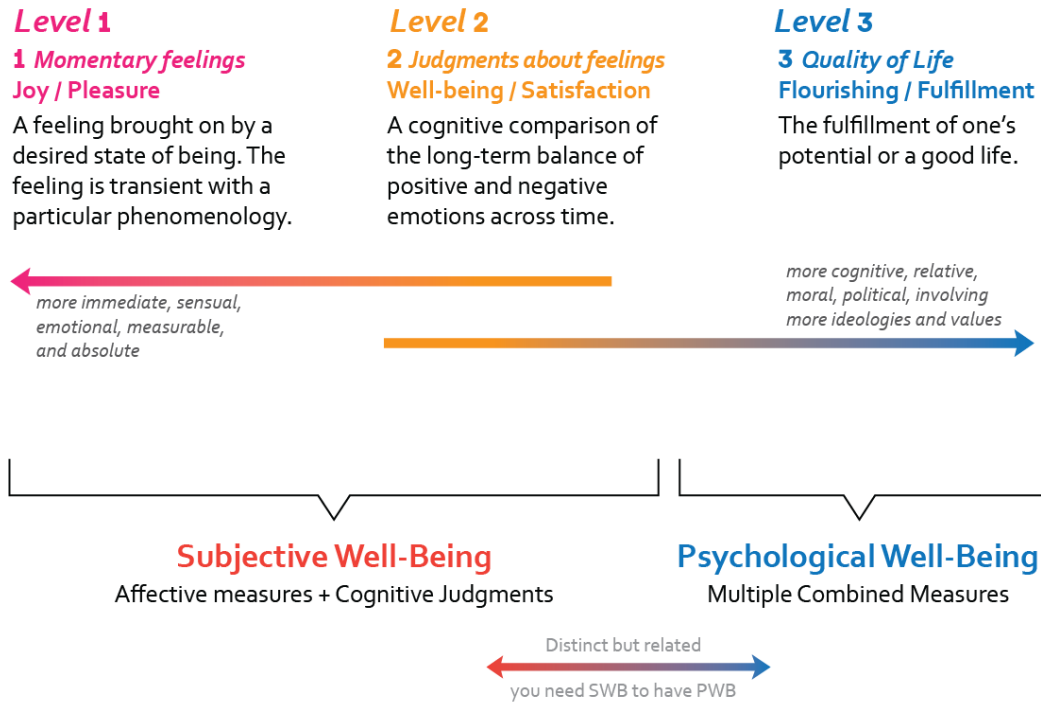


Figure 27 Defining Happiness. Chart based on Nettle's chart in "Happiness: the science behind your smile. Image by Rebecca Habtour

Level 1 Immediate *joy* or *pleasure*, can be distinguished from something more lasting like *satisfaction* or *contentment*, Level 2, but both are correlated with each other, a life of contentment is likely filled with many joyful moments, and are both needed to make up the *good life*, Level 3, a concept of happiness based on the idea that one is fulfilling their potential or purpose in life.¹⁰

Level 1 Happiness

The most immediate and direct kind of happiness involves emotion, feelings like joy, pleasure or peaceful contentment. These happy feelings are transient and have an unmistakable phenomenology. They can be brought on by a desired state of being attained, possibly unexpectedly. Sometimes referred to as hedonic well-being, this

¹⁰ Nettle, Daniel. *Happiness: The Science Behind your Smile*. New York: Oxford University Press, 2005.

kind of happiness can last different lengths of time and take on different intensities but eventually dissipates. The ebb and flow of joy and pleasure is considered an adaptive trait by evolutionary psychologists. Joy diverts other concerns to allow us to concentrate on something good, but eventually a person needs to eat, sleep, or avoid a predator, so joy needs to move into the background to allow other important programs to capture attention. These kinds of feelings are measurable directly through devices that identify regions of brain activity, and are also measured through real time or short term surveys. These measurements often interpret both the stimulation of pleasure centers as well as reduced levels of stress and frustration as indicators of happiness. The latter two reveal a restorative state of being as a form of quiet, but immediate and direct happiness.

Level 2 Happiness

When a person says she has a happy life, she is not claiming to be joyful all the time, but that, upon reflection, the balance of her life is positive over the long term. This assessment also reflects a comparison of possible outcomes to expectations. This is often referred to in the research as subjective well-being, and life satisfaction. There is a strong relationship between Level 1 and Level 2 happiness, because one who reports a high level of life satisfaction generally has enjoyed a life full of joyful, pleasurable and restorative emotions. It is this kind of happiness that is recorded in the World Happiness Index and several similar indexes that rely on self-reporting of overall well-being. There are flaws in self-reported measures of happiness. Self-reports of happiness can be driven by one's need to see and portray oneself as a happy person, which might be influenced by culture. Veenhoven argues for the validity of

national happiness comparisons noting the happiness reports of migrants aligning with the country of settlement more than their country of origin.¹¹ Self-reported happiness can also vary considerably depending on the context and circumstance in which it is asked, which means it might speak more to the happiness of that moment than an overall assessment. This doesn't mean this form of measurement is without merit. The individual knows his or her own state of happiness better than an outsider. By asking on multiple occasions noting the context, the researcher can come to a fairly reliable overall assessment of a person's general happiness. If a person believes themselves happy, they can actually synthesize happiness for themselves.¹² Subjective Well-Being is the term used to refer to affective measures (Level 1) and cognitive judgements of happiness (Level 2).

Level 3 Happiness

Aristotle's ideal of the good life, Eudaimonia, is sometimes interpreted to mean 'happiness'. Eudaimonia is a life in which a person flourishes, fulfills their potential. This is not actually a judgement of an emotional state, but instead a judgement of one's life fulfillment, which leaves it open to a variety of interpretations and subjective definitions that can vary broadly between cultures and ideologies.¹³ Research seeking this more holistic picture of happiness often rely on indexes which include multiple selected measures of health, well-being, income, autonomy,

¹¹ Veenhoven, Ruut. "Cross-national differences in happiness: Cultural measurement bias or effect of culture?" *International Journal of Wellbeing*, 2012: 333-353.

¹² Gilbert, Dan. "The surprising science of happiness". Filmed [Feb 2004]. TED. Posted [Feb 2004] https://www.ted.com/talks/dan_gilbert_asks_why_are_we_happy.

¹³ Nettle, Daniel. *Happiness: The Science Behind your Smile*. New York: Oxford University Press, 2005. 17-21

environmental mastery, self-acceptance, purpose in life, and accomplishment.

Psychological Well-Being is the term for these multiple combined measures. Despite the potential subjectivity of this way of defining happiness, researchers have drawn a stronger relationship between Level 1, Level 2 and Level 3 happiness by utilizing Level 1 and Level 2 research to select and confirm the usefulness of parameters for a Level 3 happiness index. This has allowed social scientists to statistically model happiness and identify variables that reliably and consistently affect happiness.¹⁴ The Big 7 indicators of human happiness is one such index, assembled by Richard Layard in 2005 after a thorough social science investigation, and utilizing the United States General Social Survey¹⁵, it identifies income, marital status, employment, social capital, health, personal freedom and personal values as the components vital to the overall happiness of the individual.

Subjective Well-Being (Levels 1 & 2) and Psychological Well-Being are two categorizing terms which are distinct but related. One needs Subjective Well-Being in order to achieve Psychological Well-Being.

Reliance on the idea of happiness is particularly important in the nuanced utilitarian thought of John Stuart Mill, where it reigns as the premier social value. For him “not *every* composite of pleasures which outweigh pains constitutes happiness” (Berger 1986, p. 37). Mill argued that political activity is “necessary for the development of distinctly human powers” (Salkever 1977, p. 402) which pay off in individual and social flourishing or happiness.

¹⁴ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

¹⁵ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

Measuring Happiness

Four Approaches

Researches rely on four main approaches for measuring happiness.

HOW DO YOU MEASURE HAPPINESS?

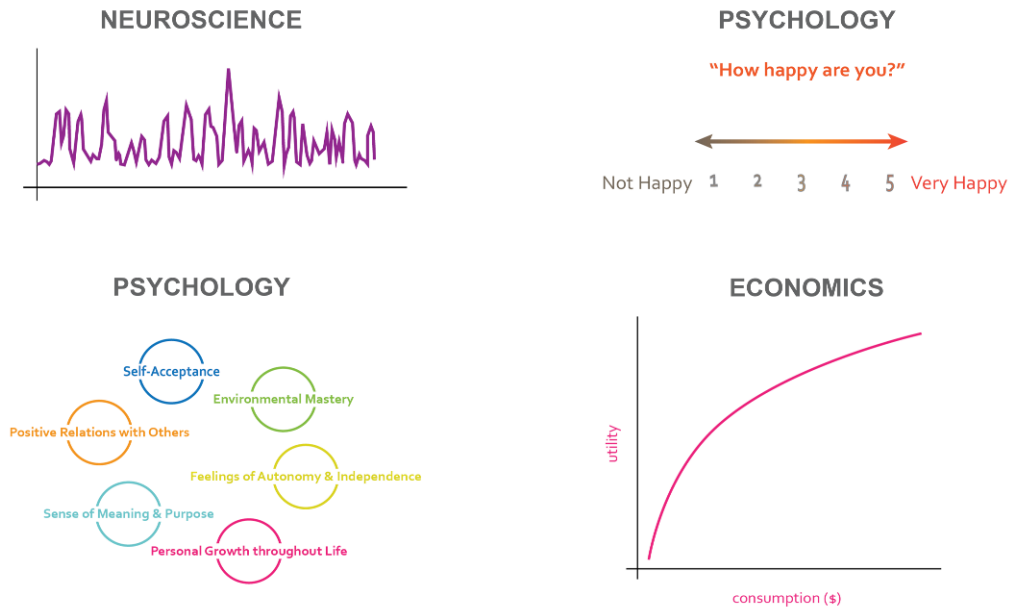


Figure 28 Four ways to measure happiness. Image by Rebecca Habtour

- 1) **Neuroscience** approaches measuring happiness by measuring physiological responses to stimuli: this can be in the form of an MRI scan, an EEG helmet, measuring cortisol levels in the blood, among other measures.
- 2) **Psychology** often measures immediate happiness by survey. Directly asking a person if they are happy has been verified by neuroscientific studies as a pretty reliable measure of immediate happiness.
- 3) **Psychology** also seeks to measure a person's overall sense of fulfillment and happiness in life by survey. People are asked to reflect on their lives generally and report on their overall sense of happiness, and are also asked about other

things considered conducive to happiness. Those questions generally relate in some way to the researcher Ryff’s list for Eudaimonia, which looks past momentary happiness, and a generally pleasant life into qualities that can be gained by “challenged thriving”. Sometimes a little heroic struggle can actually be good for you.

RYFF’S LIST FOR EUDIAMONIA	
Self-Acceptance	Environmental Mastery
Positive Relations with Others	Personal Growth throughout Life
Sense of Meaning & Purpose	Feelings of Autonomy & Independence

- 4) **Economics** will often equate happiness to utility, operating on the assumption that the more people get what they want the happier they will be. The concept of utility is drawn from Jeremy Bentham, classical economist, hypothesized that people make life choices that satisfy their happiness, which he called utility. Over time economists began to interpret utility as the propensity of people to choose something, seeing that as an indication that the chosen thing will make the person happy. Unfortunately this has proven to be a very problematic way of measuring what makes a person happy. Not only does evidence show that past the point when basic needs are met, more money does not increase happiness, many people will pursue and acquire things they want which may detract from their overall happiness, for example a bigger house or a promotion at work might just lead to increased stress, a long commute, and

less time for healthy relationships.¹⁶ Currently, on the international scale, there are economists are expanding beyond a typical measurement of utility based on gross domestic product (GDP) and looking at other measures for policy making which include health, social support, trust (measured as perceived absence of corruption in government and business), perceived freedom to make life decisions, and generosity. This more complex set of measurements make up the components of the United Nation’s internationally administered survey intended to measure Gross National Happiness.¹⁷

Identifying Key Environmental Factors

6 Factors

I grouped the research findings into six environmental factors that impact human happiness:

Nature	Identity
Light	Access
Surprise	Sociality

¹⁶ Nettle, Daniel. *Happiness; the science behind your smile*. New York: Oxford University Press, Inc., 2005 2,21

¹⁷ Helliwell, John, Richard Layard, and Jeffrey Sachs. *World Happiness Report*. Sustainable Development Solutions Network (SDSN), 2015.

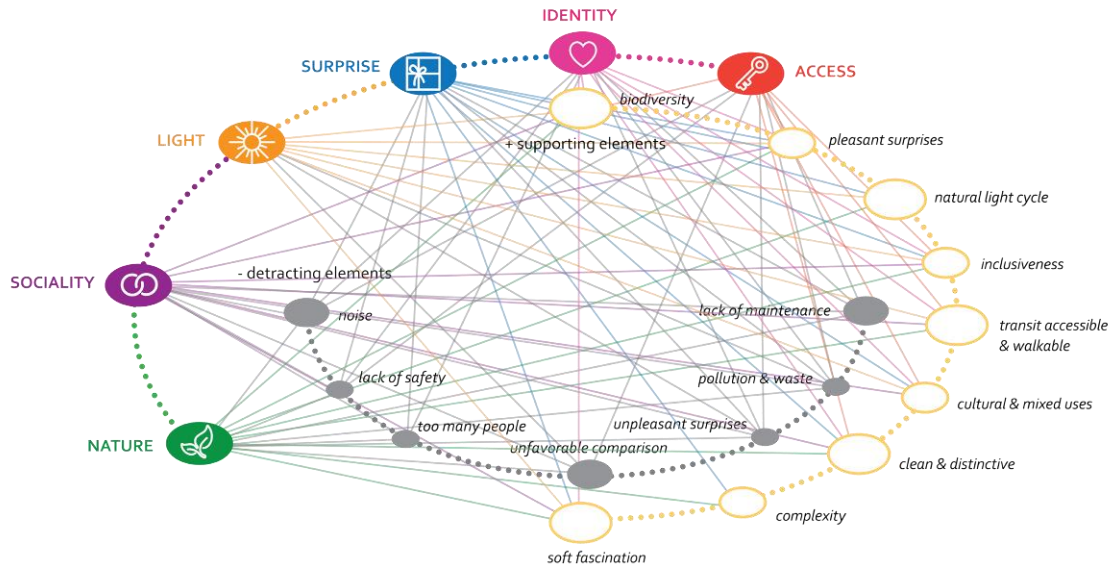


Figure 29 Environmental factors that can influence design and planning decisions for happiness. Image by Rebecca Hابتour

Several elements that positively support happiness in relation to the 6 key factors were identified, including:

connection to nature – tempered by protection from extremes

pleasant surprises – more impactful than expected pleasant experiences

natural light cycle – for overall balanced mental health

inclusive beauty – to help reduce social tension between classes

transit accessibility & walkability – encourages a sense of connection to a city

cultural & mixed uses – encourages social connection

clean & distinctive places – identity can be defined by special places

moderate complexity – enough to engage, but not confuse the senses

soft fascination – from Attention Restoration theory, effortless attention

Several elements that negatively influence or detract from happiness in relation to the 6 key factors were identified, including:

noise – resists adaptation more than most negative experiences

lack of safety – fear of other people can inhibit enjoyment of shared spaces

too many people – crowded space can be engaging, but also stressful

unfavorable comparison – visible divisions between classes

unpleasant surprise – any unexpected negative

pollution & waste – adjacency to incompatible uses

lack of maintenance – such as blighted properties, litter, unkempt parks

Restorative & Interactive

From there I identified more broadly two general categories to frame the environmental influences on happiness, those things that have a calming restorative effect, and those things that are engaging, social and interactive.



Figure 30 Restorative and Interactive sides to happiness organize the 6 identified environmental factors. Image by Rebecca Habtour.

Chapter 4: Understanding & Applying the Key Factors

Nature

Selected Findings



NATURE HAS A RESTORATIVE EFFECT AT EVERY SCALE

FREQUENT DAILY EXPOSURE MAXIMIZES IMPACT

THE GREATER THE BIODIVERSITY THE BETTER

Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul.

- John Muir

There is robust evidence showing that exposure to nature has a restorative effect on people. The positive effects have been supported by research on just about every scale including, a plant in the office, a view out the window to a natural scene, a walk in a park, gardening, street planters, the “greening” of a playground, all the way to living every day in a natural setting. Frequent daily exposure to natural elements is an important key to boosting happiness. There also is evidence to support that the greater biodiversity, the higher the positive impact. Exposure to nature has also been linked to reduction in crime. And because of the strong influence of nature

connectedness on happiness, the pursuit of sustainability and happiness dovetail beautifully for synergistic outcomes.¹⁸

Results from multiple studies support the notion connection to nature has many positive benefits and could be a path to human happiness. Nisbet & Zelenski found nature relatedness to be a significant distinct predictor of many happiness indicators, even after controlling for other subjective connections (e.g. with friends or country).¹⁹

Within environmental psychology, restorative theory has proposed that natural settings promote recovery from stress and fatigue via attention restoration mechanisms. This state of emotional recovery from stress is seen as a key element to improving the overall happiness of an individual. Soft fascination (intriguing environmental stimuli) promotes involuntary attention. It is a pleasant distraction that enables cognitive recovery and is typically present in natural settings. By contrast, hard fascination (demanding stimulation) grabs attention dramatically, increasing cognitive load, and is typically present in urban settings. This theory has been largely substantiated by several different studies on recovery responses and stress levels after expose to different environments.

One example is a study done by researchers from Edinburgh, Scotland who used mobile electroencephalography (EEG) to record and analyze the emotional experience of a group of walkers in three types of urban environments.²⁰ The areas of

¹⁸ Desai, Pooran, and Ed Blake. "Is happiness the key to unlocking sustainability?" In *Building Happiness*, by Jane Wernick, 44-51. London: Black Dog Publishing Limited, 2008.

¹⁹ Zelenski, John et al. "Happiness and Feeling Connected: The Distinct Role of Nature Relatedness." *Environment and Behavior*, 2014: 3-23.

²⁰ Aspinall, Peter et al. "The urban brain: analysing outdoor physical activity with mobile EEG." *British Journal of Sports Medicine*, 2013: 1-6.

approximately equal length were: (a) an urban shopping street, (b) a path through green space, and (c) a busy commercial district).



Figure 31 (a) urban shopping street; (b) green space and (c) busy commercial district.
Aspinall, Peter et al. "The urban brain: analysing outdoor physical activity with mobile EEG." *British Journal of Sports Medicine*, 2013

The EEG equipment provided continuous recordings from five channels: short-term excitement, frustration, engagement, long-term excitement (or arousal) and meditation. The analysis showed evidence of lower frustration, engagement and arousal, and higher meditation when moving into the green space zone; and higher engagement when moving out of it.

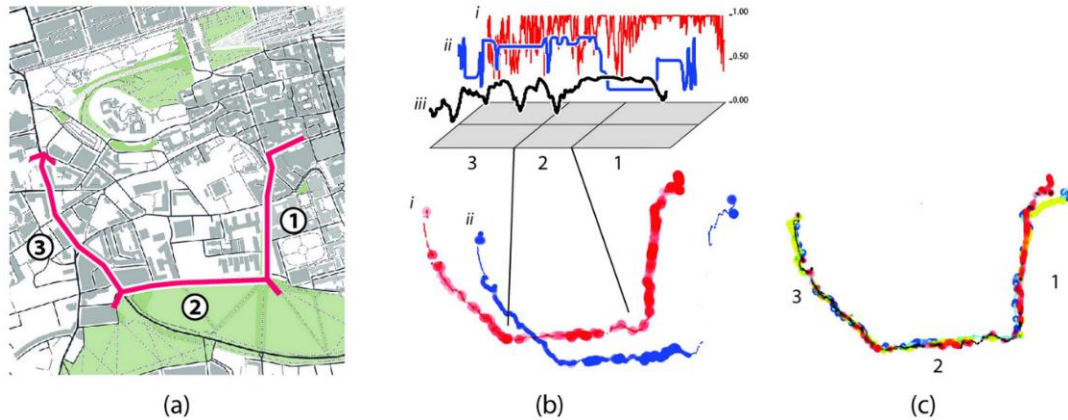


Figure 32(A) Map of the route in central Edinburgh (B) Emotional activity of one participant during the route. Red shows excitement; blue shows frustration. (C) Aggregate of excitement levels from 3 participants.

In the above figure you can see in (b) that although this individual was excited to be in the commercial districts, it was a hard fascination, a demanding kind of stimulation that also comes with higher levels of frustration and fatigue. There was a significant difference when walking through the green space, lower frustration and excitement overall and higher meditation. This highlights the vital importance of green elements in urban areas. Although high levels of stimulation in exciting shopping areas can be enjoyable, it also adds to stress and fatigue. Without opportunities for recovery, they will not be the best environments at enhancing an individual's overall happiness.

Mackerron et al. studied 20,000 people with an app that pinged participants to report their happiness at random moments, and documented their coordinates with satellite positioning. The researchers controlled for weather, daylight, activity, companionship, location type, time, day, individual variation and any response trend. The finding was that participants are significantly and substantially happier outdoors in all green or natural habitat types than they are in urban environments.²¹

²¹ MacKerron, George, and Susana Mourato. "Happiness is greater in natural environments." *Global Environmental Change*, 2013: 992-1000

Different studies have found similar results in adults and children.²² One study took children on a nature walk through a park-like university campus and a second walk through an urban built context, then had the children participate in an attention task to measure their mental recovery.²³ The children responded faster on the attention task after a nature walk than an urban walk. The fact that the walk was through a campus and still have built elements indicates that green in a built context, aka an urban park, still can have a positive effect. Another study by Kelz, et al. measured significantly reduced physiological stress levels in children after a greening redesign of their school yard which was previously fully paved. The pupils perceived the new green environment as more restorative.²⁴

There are several more studies recording similar results. The next step is better understanding what elements with a “green” space are meaningful, and can maximize this soft fascination or restorative space.

Perception of species richness (birds, butterflies, plants) was found by Dallimer et al. to improve one’s sense of well-being.²⁵ It was noted that perception of biodiversity didn’t always match reality. Reported well-being increased with greater bird diversity, but revealed no pattern with butterflies and declined with greater plant diversity, potentially indicating that people are not that adept at identifying several species of plants and may have found some really diverse plant environments too

²² Wells, Nancy Dr. *How Natural and Built Environments Impact Human Health*. Cornell University, 2003.

²³ Schutte, Anne et al. "Impact of Urban Nature on Executive Functioning in Early and Middle Childhood." *Environment and Behavior*, 2015: 1-28.

²⁴ Kelz, Christina et al. "The Restorative Effects of Redesigning the Schoolyard: A Multi-Methodological, Quasi-Experimental Study in Rural Austrian Middle Schools." *Environment and Behavior*, 2015: 119-139.

²⁵ Dallimer, Martin et al. "Biodiversity and the Feel-Good Factor: Understanding Associations between Self-Reported Human Well-being and Species Richness." *BioScience*, 2012: 47-55

confusing to take in and report a response to. Several studies have found a preference for moderate levels of complexity in species and grass, flowers, water, trees/ bushes were highly valuable qualities. .

“I see a big distinction between landscapes that are preferred and those that are beneficial”, biologist Richard Fuller explained to Charles Montgomery, author of “Happy City”. Fuller and his colleagues surveyed users of parks around Sheffield England and found that visitors felt more healthy, connected and grounded after spending time in parks with many different kinds of trees and birds than in parks that distilled nature down to lawns and a few trees.²⁶ The idea of moderate levels of complexity enhancing preference for landscapes is reinforced by several additional researchers.²⁷ One researcher indicates specifically that a focal point and the presence of vegetation and water were important elements for a restorative environment.²⁸ Perception of biodiversity has been found to be important for a sense of well-being. Perception of biodiversity increase with tree cover and with greater bird diversity, but reported well-being decreases with greater plant species complexity. The researchers observed this may be related to the lack of ability by the subjects to identify many of the species.²⁹ Characteristics found to detract from the beauty of a place included a lack of maintenance, such as the presence of litter. Other research also found that the conditions of cities or the maintenance of the public sphere appear to be important

²⁶ Montgomery, Charles. *Happy City; Transforming our lives through urban design*. New York: Farrar, Straus and Giroux, 2013. p. 114

²⁷ Kelz, Christina et al. "The Restorative Effects of Redesigning the Schoolyard: A Multi-Methodological, Quasi-Experimental Study in Rural Austrian Middle Schools." *Environment and Behavior*, 2015: 119-139.

²⁸ Herzog, Thomas, and Sarah Strevey. "Contact with Nature, Sense of Humor, and Psychological Well-Being." *Environment and Behavior*, 2008: 747-776.

²⁹ Dallimer, Martin et al. "Biodiversity and the Feel-Good Factor: Understanding Associations between Self-Reported Human Well-being and Species Richness." *BioScience*, 2012: 47-55.

factors for perceived beauty and happiness.³⁰ Some research has been done that indicates the aesthetic experiences associated with natural forms are related to their fractal characteristics.³¹ Across riparian sites, tree cover showed a notable increase in reported well-being. Litter or apparent lack of maintenance consistently reduced a sense of well-being.

Other approaches to better understanding what in an environment generates the most positive effects are studies that show participants images of various scenes, nature, urban, deserts, and savannas. The images that showed the most lush green and full of life environments were preferred over all others in a study done by Hartmann, et al.³² Herzog et al. in a study surveying favorite places and unpleasant places as reported by 120 university students, natural settings were overrepresented in survey of favorite places, and underrepresented among unpleasant places. “Being relaxed”, “being away from everyday life”, “forgetting worries”, “reflecting on personal matters” linked people’s favorite places to *restorative* experiences.³³ Herzog also found in his literature review uniform finding from studies was that natural settings, compared to urban settings, led to a reduction in physiological indicators of autonomic arousal, as well as to an improvement in mood. The latter included both increased positive affect and decreased negative affect.

³⁰ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

³¹ Hagerhall, Caroline M., Terry Purcell, and Richard Taylor. "Fractal dimension of landscape silhouette outlines as a predictor of landscape preference." *Environmental Psychology*, 2004: 247-255.

³² Hartmann, Patrick, and Vanessa Apaolaza-Ibanez . "Beyond savanna: An evolutionary and environmental psychology approach to behavioral effects of nature scenery in green advertising." *Journal of Environmental Psychology*, 2010: 119-128.

³³ Herzog, Thomas, and Sarah Strevey. "Contact with Nature, Sense of Humor, and Psychological Well-Being." *Environment and Behavior*, 2008: 747-776.

Soft fascination has been recorded on different scales, everything from higher reported happiness level from people who live in quiet green suburbs or rural areas than urbanites³⁴ to large green areas in urban areas, green university campuses³⁵, to the positive effects of pocket parks³⁶, all the way down to restorative effects from a natural view out a window³⁷ or having a plant in one's office space³⁸. The higher reported happiness levels in rural / suburban areas over urban areas was reported consistently in developed countries like most of Europe and the US. In some quickly developing countries, like China, happiness is greater in urban areas.³⁹ This is likely due in part to significant improvements in opportunity and personal economic standing. More developed countries have met more of their overall economic needs. With the growing density in urban areas, cities have a real challenge on their hands to try and bring some of the benefits of living in the suburbs or rural areas into the cities. Clearly greening of all varieties is an important component, however there are other likely contributing factors as well. The greater space between housing acts as both a sound buffer and give a sense of privacy. Creating better sound insulation between more tightly packed urban housing situations may help reduce some of the stress and tension of living in such close proximity. Incorporating more opportunities for

³⁴ Lilti, Petroula, et al. "Mapping Perceived Happiness alongside the Rural-Urban Continuum." *Procedia & Economics and Finance*, 2014: 288-301. & Sander, William. "Location and happiness in the United States." *Economic Letters*, 2011: 277-279.

³⁵ Hipp, Aaron et al. "The Relationship Between Perceived Greenness and Perceived Restorativeness of University Campuses and Student-Reported Quality of Life." *Environment and Behavior*, 2015: 1-17.

³⁶ Nordh, Helena, and Kjersti Østby. "Pocket parks for people – A study of park design and use." *Urban Forestry & Urban Greening*, 2013: 12-17.

³⁷ Kaplan, Rachel. "The Nature of the View From Home; Psychological Benefits." *Environment and Behavior*, 2001: 507-542.

³⁸ Evensen, Katinka et al. "Restorative Elements at the Computer Workstation: A Comparison of Live Plants and Inanimate Objects With and Without Window View." *Environment and Behavior*, 2015: 288-303.

³⁹ Korpela, Levi, et al. "Restorative Experience an Self-Regulation in favorite places." *Environment and Behavior*, 2001: 572-589.

individuals to have terraces or gardens, even in high-rise apartment buildings can bring connection to nature closer to residents in small but potentially very meaningful ways. Community gardens and well-designed parks also hold great potential for bringing a little of the rural to the urban.

Identifiable elements that detract from the restorative environments include a perceived lack of safety,⁴⁰ excessive noise, poor maintenance or blight, too few or uncomfortable benches, too many people, too few people (also an issue of perceived safety) litter.⁴¹ Noise in particular has been noted as something that can detract from reported levels of happiness in the long term. Noise mitigation design measures because very important on sites neighboring busy roads or highways or other noisy environments. Perceived safety and actual safety may be improved by nature as well. Researchers have found a great deal of data linking green courtyards in Chicago social housing to reduced crime rates. Multiple researchers have linked exposure to nature to reduced levels of aggression and higher levels of altruism.⁴² Reaction times to vocal expressions of anger are shorter after viewing urban scenes, and reaction times to vocal expressions of joy are shorter after viewing a nature scenes.⁴³

A well-designed and attractive urban environment may have a stress-reducing and mood enhancing power equal to that of an attractive natural environment. Providing frequent interaction with green spaces within a city is a purposeful means of

⁴⁰ Ettema, Dick. "Runnable Cities: How Does the Running Environment Influence Perceived Attractiveness, Restorativeness, and Runny Frequency." *Environment and Behavior*, 2015: 1-21.

⁴¹ Nordh, Helena, and Kjersti Østby. "Pocket parks for people – A study of park design and use." *Urban Forestry & Urban Greening*, 2013: 12-17.

⁴² Montgomery, Charles. *Happy City; Transforming our lives through urban design*. New York: Farrar, Straus and Giroux, 2013 p.110

⁴³ Korpela, Levi, et al. "Restorative Experience an Self-Regulation in favorite places." *Environment and Behavior*, 2001: 572-589.

enhancing a city's restorative potential. However, parks and gardens are not the only way of approaching that happy effect. Films of an urban environment in Amsterdam's Eastern Docklands with very little green, and a very green rural Dutch Amstelland were shown to students having just undergone a stressful test, then the students restorative response was measured. They proved to have equivalent effects. Water was a special feature of the Docklands and it was noted as possibly partly responsible for restorative effects.⁴⁴



Figure 33 Amstelland: the location where the natural video was filmed



Figure 34 Eastern Docklands: the location where the urban video was filmed.

Application to Test Case

The selected site in downtown Baltimore is fairly representative of much of downtown. It is checkered with several large impervious asphalt lots where

⁴⁴ Karmanov, Dmitri, and Ronald Hamel. "Assessing the restorative potential of contemporary urban environment(s): Beyond the nature versus urban dichotomy." *Landscape and Urban Planning*, 2008: 115-125

structures have been torn down. There are a few public or semi-private parks of varying quality and upkeep.



As a way to increase the frequency and quality of interaction with nature, a network of greenways throughout the city could facilitate daily commutes on foot or bike.

There are several opportunities along riversides that have the potential to be groomed or day-lit for meaningful use.

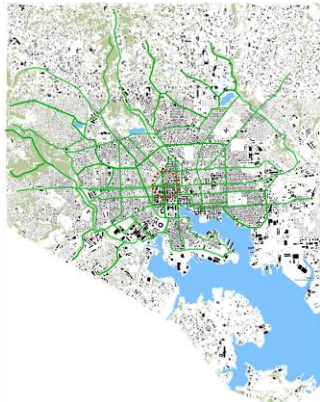
Recapturing and greening roadways or portions of roads for pedestrian use can not only enhance the restorative qualities of the journey, but could act as attractive visual connectors between parks and other neighborhood assets. For example, the linear Preston Gardens Park is a good candidate for capturing some adjacent roadway to reconnect and enhance the park experience.

My architectural intervention is placed centrally between two underutilized parks, and I'm proposing a pedestrian garden path down one of the more quiet mid-block roads Hamilton St rolling past residences and small businesses and cutting through what is now an inaccessible fenced parking lot.



NATURE

strategy: build network of greenways | connect + improve parks | central green intervention



PROPOSED GREENWAY SYSTEM

PERECCA ARCHITECTURE | BOSTON TERRACE | ARCHITECTURE & COMMUNITY PLANNING | UNIVERSITY OF MASSACHUSETTS COLLEGE PARK



PROPOSED INTERVENTIONS

DESIGNING HAPPINESS
ARCHITECTURE & URBAN DESIGN FOR JOY & WELL-BEING

On site strategies include bringing more biodiversity down to human level and creating different kinds of opportunities for people to linger among the plants, such as cafe style chairs and table to complement a neighboring coffee shop, a rock garden with places to sit, climb and wander through, as well as distributing birch trees and wildflowers in patches along the path for people to meander between.



NATURE

strategy: biodiversity at people level | places to linger | increased frequency of green interaction



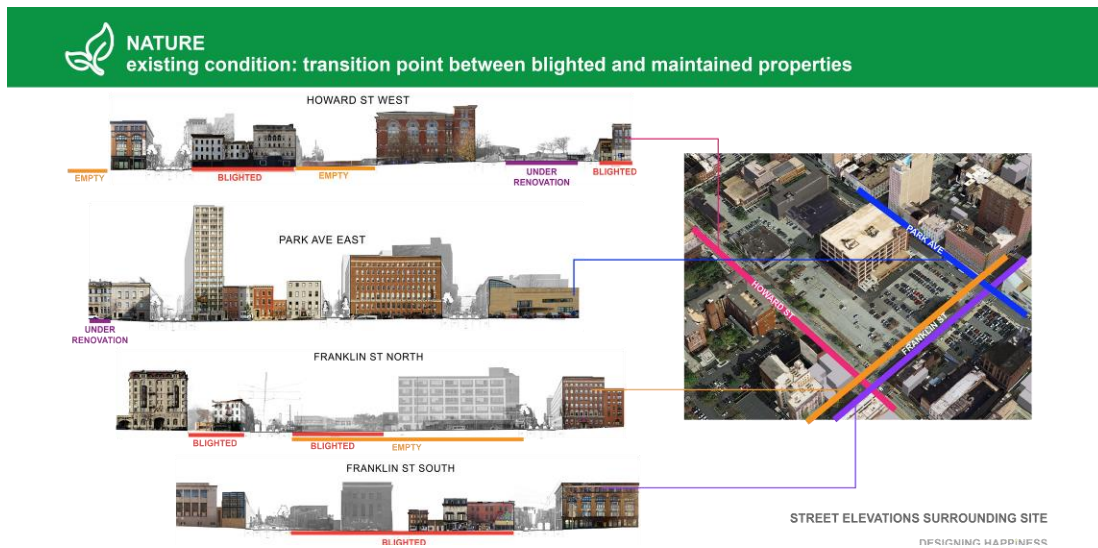
PERECCA ARCHITECTURE | BOSTON TERRACE | ARCHITECTURE & COMMUNITY PLANNING | UNIVERSITY OF MASSACHUSETTS COLLEGE PARK



PROPOSED SITE INTERVENTIONS

DESIGNING HAPPINESS
ARCHITECTURE & URBAN DESIGN FOR JOY & WELL-BEING

The current site is at a transition between a part of the city full of blighted buildings and vacant lots, and another part that has either been preserved or restored. A nature filled public serving intervention could potentially have a great transformative effect on the surrounding context, helping to draw positive attention and development to the area. I believe that publicly accessible institutions make the best anchors for healthy community growth.



My idea is that a unique tropical climate palm house open to the public will give downtown dwellers an opportunity to enjoy a rich restorative experience on a regular basis.



NATURE

strategy: unique bio-climate experience for the public | Palm House Natatorium Community Center



EXISTING LOT FRANKLIN ST NORTH



PALM HOUSE NATATORIUM SECTION

REBECCA HARTMAN | MASTER THESIS | ARCHITECTURE & COMMUNITY PLANNING | UNIVERSITY OF MARYLAND COLLEGE PARK

DESIGNING HAPPINESS
ARCHITECTURE & URBAN DESIGN FOR JOY & WELL-BEING

Restorative happiness strategies can dovetail beautifully with sustainable solutions as well, like rainwater collection, constructing habitat to invite biodiversity, and natural ventilation systems.

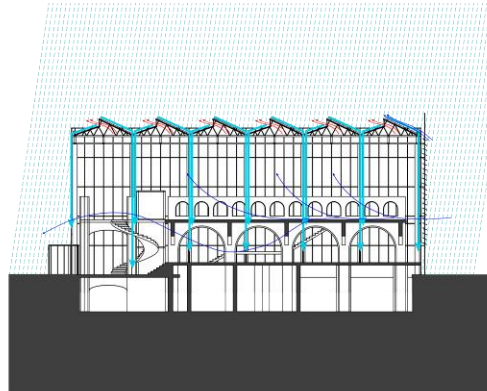


NATURE

strategy: maximize natural assets on site



GARDEN PASSAGE WITH RAIN GARDEN



RAINWATER COLLECTION + NATURAL VENTILATION

REBECCA HARTMAN | MASTER THESIS | ARCHITECTURE & COMMUNITY PLANNING | UNIVERSITY OF MARYLAND COLLEGE PARK

DESIGNING HAPPINESS
ARCHITECTURE & URBAN DESIGN FOR JOY & WELL-BEING

Other potential tactics drawn from precedent studies: Adjacent to nature is good, engaged with nature is even better. This series of design tactics encourage ways to connect people to nature in a more meaningful way in their day to day lives.

Nature Strategies

Build a network of greenways

Connect and improve city parks

Invest in quality green intervention at key positions

Bring biodiversity to human level

Increase frequency of green interactions of all kinds and scales

Provide people places to linger and sit among nature

Create a unique bio-climatic experience for the public

Maximize natural assets on the site through sustainable measures such as natural ventilation and rainwater capture

Light

Selected Findings



SUNLIGHT BOOSTS SEROTONIN LEVELS

NATURAL LIGHT CYCLES SUPPORT CIRCADIAN RHYTHMS

FILTERED LIGHT CAN INSPIRE SPIRITUALITY

We went down into the silent garden. Dawn is the time when nothing breathes, the hour of silence. Everything is transfixed, only the light moves.

— Leonora Carrington

Natural light cycles support our internal circadian rhythms, and boost our serotonin levels, and are a necessity for good health and happiness. Going with too little daylight for too long can lead to depression, sleep disorders, and other maladies. Also, light is often used as a metaphor for spirituality and for inspiration. The rainbow a symbol of hope and promise. Light is the literally the source of life. The way we filter light can bring unique meaning to the spaces we occupy.

Daylighting is associated with improved mood, enhanced morale, lower fatigue, and reduced eyestrain. Sunlight is particularly effective at improving happiness levels for those with SAD or Seasonal Affective Disorder, a condition where people get clinically depressed in the winter because there is less sunlight. However, outside of SAD people, sunnier climates do not necessarily mean greater happiness than places very low in sunshine. Iceland is considered one of the happiest places in the world. Mark Easton at the BBC in his article about sunshine and happiness quipped “Perhaps it is not the sunshine that matters so much as the pleasure we get when our weather changes?”⁴⁵ Daylight is not the only important aspect of light quality. Darkness plays an important role in regulating circadian rhythms, the natural cycle of waking and sleeping, which is important to balance melatonin (sleep inducers) and serotonin levels. Vitamin D is also important for a positive mood, although sunblock is good to protect the skin, about 15 minutes of unprotected sun exposure three times a week is

⁴⁵ Easton, Mark. "Does sunshine make us happier?" *BBC News*, July 25, 2012.

recommended to boost vitamin D levels.⁴⁶ Meeting a need for contact with the outside living environment is also considered one of the important psychological aspects from daylighting.⁴⁷

Application to Test Case

There is no one right light experience. Having access to a variety of ways to experience natural light connects one to the natural cycle, while providing the opportunity to experience the unique moods of full sun, dappled shade, and dim caverns with shafts of light diving in through crevices and glass floor panels. The steel framed glass house with its thick brick piers, and stereotomic underbelly frame a variety of light experiences that are only added to when the palm gardens come into play.



Figure 35 Light studies in the test building. Images by Rebecca Habtour

⁴⁶ Senne, Steven. "Vitamin D research may have doctors prescribing sunshine." *The Associated Press*, May 21, 2005.

⁴⁷ Edwards, L, and P. Torcellini. *A Literature Review of the Effects of Natural Light on Building Occupants*. National Renewable Energy Laboratory, 2002.

Light filtration is needed in the summer months, so I've selected two solutions, colored solar horizontal fins that will collect energy while engaging the interior with colored light, like a modern stained glass. These solar panels are also repeated on the south side of the angled roof.

Ideal solar shading angles on my site were researched for determining the angle of the roof and solar fins. Analysis of the steel frame structure needed to support the glazing and shading systems was conducted by mechanical engineer Ed Hابتour Ph.D. P.E. with my assistance. The second is a growing shading device with climbing plants sheltering the windows in the seasons they are most needed.

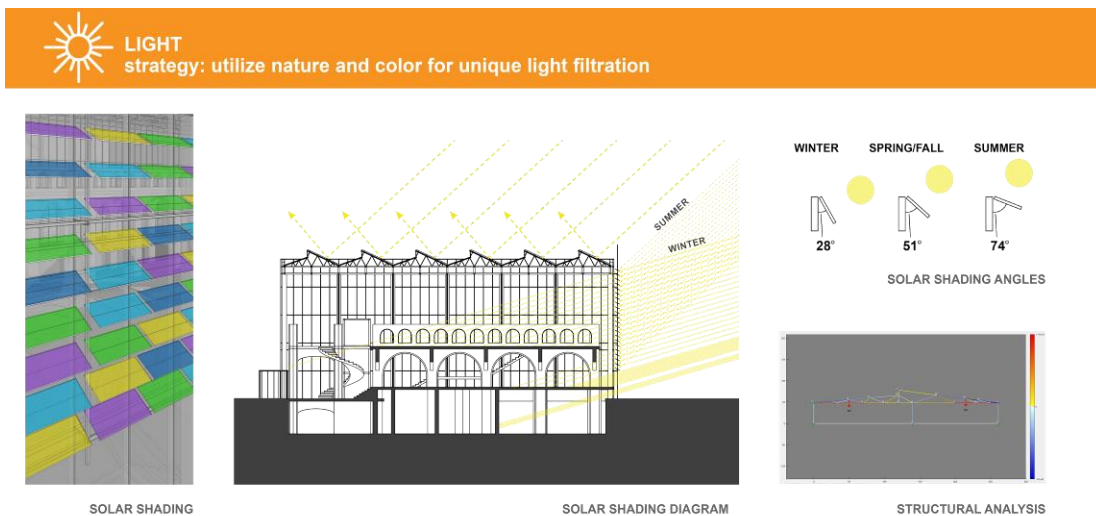


Figure 36 Solar shading and structural systems diagrams. Assistance with structural analysis given by Ed Hابتour Ph.D. P.E. Images by Rebecca Hابتour



LIGHT
strategy: utilize nature and color for unique light filtration



SOUTH FACING ELEVATION



NWF HEADQUARTERS GREEN SHADING

Figure 37 South facing elevation showing green shading implementation. Image by Rebecca Habtour

Light Strategies

Provide a variety of natural light experiences

Utilize colored solar glass for unique light filtration and energy production

Utilize nature for unique light filtration

Surprise

Selected Findings



SURPRISE

**PLEASANT SURPRISES BOOST POSITIVE FEELING MORE
THAN EXPECTED PLEASURES**

*Happiness is a butterfly, which, when pursued, is always beyond our grasp,
but which, if you will sit down quietly, may alight upon you.*

- Nathaniel Hawthorne

The pleasure centers of the brain light up when surprised with something pleasant, even more so than when that pleasant thing is expected. I think one great way to respond to this idea is to integrate moments of impractical beauty and fun into design work. People who consider their city beautiful also report greater levels of happiness. In some languages, there is a lexical link between happiness and good luck, for example *gluck/glücklich* (happy/lucky) in German and *Good hap* (Good Luck) in English. This suggests that happiness has something to do with things turning out better than expected. A study by psychologist Norbert Schwarz involved placing a dime near a copy machine where they knew it would be found. When the subjects surprised by the dime were surveyed shortly thereafter, their self-reported overall satisfaction with life was substantially higher than other subjects who did not find a coin. Asking people on a sunny day, or in a nice room, or on a day going better than expected creates a similar effect.⁴⁸

Gregory Berns and colleagues used MRIs to measure response to a sequence of pleasurable stimuli, in this case, fruit juice and water, distributed in predictable and

⁴⁸ Nettle, Daniel. *Happiness; the science behind your smile*. New York: Oxford University Press, Inc., 2005. p. 35

unpredictable patterns.⁴⁹

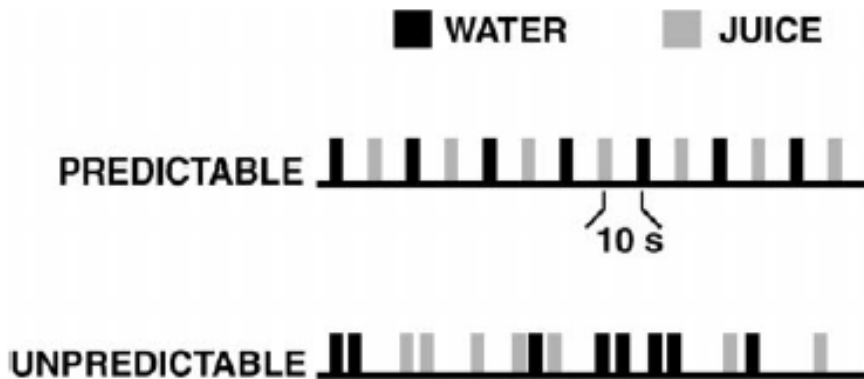


Figure 38 Bern's patterns of predictable and unpredictable distributions of juice and water. Berns, Gregory et al. "Predictability Modulates Human Brain Response to Reward." *Journal of Neuroscience*, 2001: 2793-2799.

Unpredictability correlated as a significant main effect with activity in the reward regions of the brain. Response to unpredictability, not response to receiving the preferred beverage, correlated highly with areas of the brain associated with dopamine production. The study suggests people are designed to crave the unexpected.

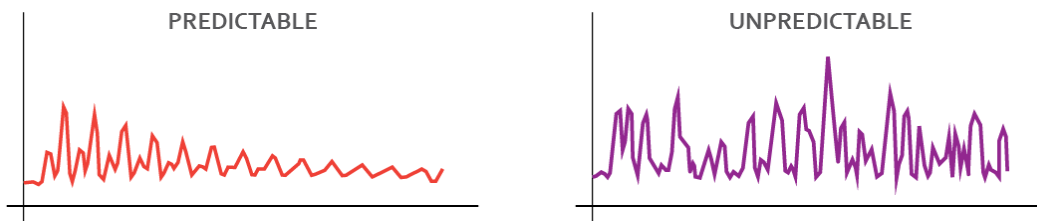


Figure 39 The brain's reward and sensory response to predictable and unpredictable patterns of water and juice distribution measured by MRI. The predictable run progresses to 0, while the unpredictable run remains high-amplitude throughout. Image by Rebecca Habtour.

If an urban space or piece of architecture is designed to facilitate pleasant surprise, it can act as a temporary mood booster. Designing a pleasant surprise suggests creating spaces or elements that are engaging, changeable or ever evolving. Creativity and

⁴⁹ Berns, Gregory et al. "Predictability Modulates Human Brain Response to Reward." *Journal of Neuroscience*, 2001: 2793-2799.

play become important in the design process when designing for delightful surprise. Elements can become kinetic and interactive, like a stair transformed into the musical keys of a piano or a digitally controlled surface that responds to motion. The changes inherent in natural light can be harnessed to spectacular effect, like prisms bending light, or shifting colors that speak to the progression of the sun. Thoughtful integration of built form with other living or moving elements, water, plants, animals and insects can add fascination and pleasant surprise that transforms over time.

Design Implications

Designing a “pleasant surprise” suggests creating architecture that is changeable or ever evolving. Creativity and play become a priority in the design process when designing for potential happiness.

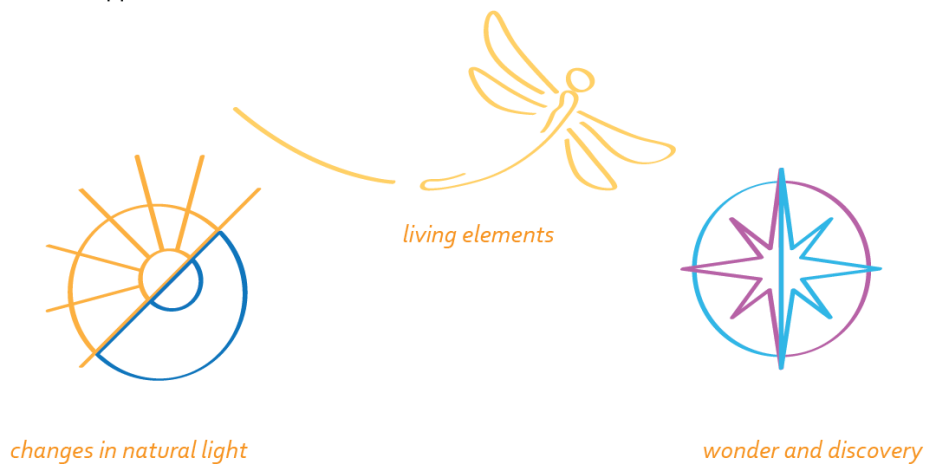


Figure 40 The effect of the unexpected and its design implications. Illustrations by Rebecca Habtour

The possibility that architecture might afford a pleasurable surprise, an element of delight, or offer up an environment that is better than expected encourages a pursuit of beauty for its intrinsic qualities.

Kevin M. Leyden, Abraham Goldberg and Philip Michelbach studied the relationships between happiness and city design in 10 major international cities. Their findings suggested that the more respondents felt their city was beautiful, clean and

safe, the more likely they were to report being happy. Similarly, the more they felt that public water was safe, and their city was a good place to rear children, the more likely they were to be happy. Among all of these, the perception of living in a beautiful city had the strongest correlation with happiness.⁵⁰

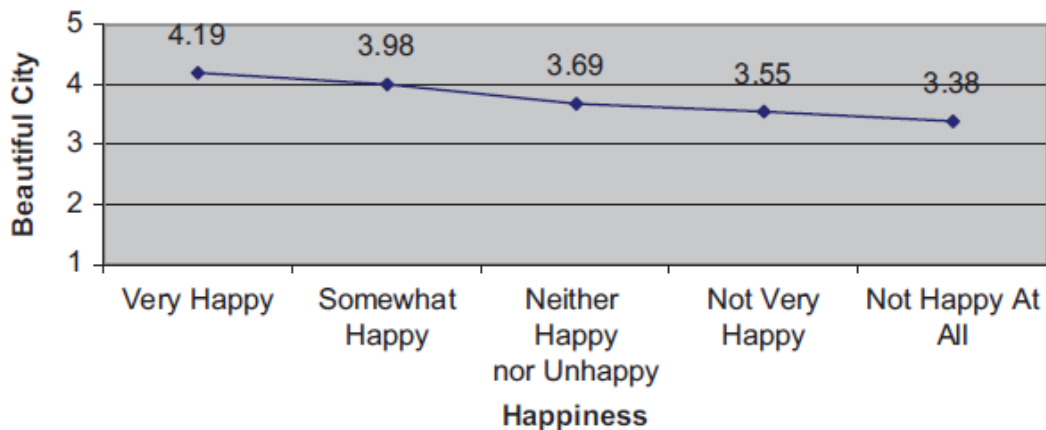


Figure 41 Mean score of "(city name) is a beautiful city" and Happiness. Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

Determining what makes a city or a place beautiful through empirical analysis is exceptionally difficult. Possible measureable determinants vary across cultures and between individuals. Instead of looking to exactly identify the most desirable proportions of a rectangle, or the most popular colors for creating the ideal painting, scientist address these issues by instead working to identify elements that generally enhance pleasure or have a restorative effect. This type of approach can contribute to a catalogue of elements that have been found to enhance an experience of beauty, but not a definitive set of requirements that must be met in order to attain beauty. This can also work in the inverse, identifying elements that are commonly considered impediments to the experience of beauty.

⁵⁰ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

The concept of urban beauty links significantly with the factors nature, light and identity. In Karmanov's study the researchers identified the likely characteristics of urban settings with high restorative or beautifying potential.⁵¹ Green spaces, water, and natural light show restorative qualities, an intricate spatial layout add interest and encourage exploration, and visual landmarks facilitate orientation bringing a sense of ease. Giving places a narrative also had a significant impact on the perceived interestingness and beauty ratings of a place, indicating that an emotional connection strongly influences one's sense of aesthetics. Another example of these connections can be found in a study by Bo Chen. People visiting a Chinese public garden were surveyed on their experience of the space. Scenic beauty was the most significant reason people gave for visiting the garden followed by an environment to relax, find peace with nature and socialize. Cultural features like buildings, bridges and causeways were identified, but many did not perceive them. Touch, smell and sound were important parts of the experience, highlighting the impacts of water, trees, rocks, sculptures, flowers, grass, birds, music, and wind.⁵²

Application to Test Case

To give people a reason to occupy the sites at night, and make it feel active and safe, an LED light display that mimics the flight of fireflies flickering up through the

⁵¹ Karmanov, Dmitri, and Ronald Hamel. "Assessing the restorative potential of contemporary urban environment(s): Beyond the nature versus urban dichotomy." *Landscape and Urban Planning*, 2008: 115-125.

⁵² Chen, Bo, Ochieng A. Adimo, and Zhiyi Bao. "Assesment of aesthetic quality and multiple functions of urban green space from the users' perspective: The case of Hangzhou Flower Garden, China." *Landscape and Urban Planning*, 2009: 76-82.

plants and along the path is proposed, with the intent of creating a nice moment of surprise within the urban landscape.



Surprise Strategies

Integrate moments of impractical beauty into every project.

Incorporate artwork that is engaging and interactive.

Use natural features like rock gardens and water features to invite discovery and play.

Access

Selected Findings



**EQUITABLE ACCESS TO AMENITIES BUILDS POSITIVITY
BETWEEN DIFFERENT GROUPS OF PEOPLE**

**CAR CENTERED INFRASTRUCTURE INHIBITS HAPPINESS
ON SEVERAL FRONTS**

**MIXED USE WALKABLE TRANSIT ORIENTED COMMUNITIES
SUPPORT HAPPY LIFESTYLES**

We can have a city that is very friendly to cars or we can have a city that is very friendly to people. We cannot have both.

- Enrique Penalosa, former Mayor of Bogota, Columbia

Access to the basics like food, health services, banking services are essential. Adding to that, if people have a library or community center, music venue, cafe, restaurant, or theater, they have opportunities to meet, interact and build relationships. Access can't be the exclusive privilege of those better off, no particular group can be stigmatized for happiness to grow in communities, equity is important.

Transportation is a key issue. We have built or retrofitted most of our American infrastructure to the automobile, which has seriously impacted human happiness. Car commutes have been shown to create increased levels of stress in drivers, considerably higher than stress levels in transit commuters. Long commutes eat away at the fabric of trusting relationships as people have no time to interact with their neighbors, or supervise their children, both of which have been connected to

higher crime rates. Opportunities for daily exercise, which might be found in a walking or biking commute naturally, are diminished. Because of the automobile, many city streets have become places of great danger, and loud noises. Children cannot play, and people do not want to linger and chat with their neighbors. When our cities and amenities are built around the car, those who cannot afford cars, or cannot drive due to a disability or another reason are cut off from reasonable access to basic needs, employment or opportunity, creating a stigma for those that have no other choice but to use an inefficient and unpleasant system just to live their daily lives. By connecting transit and multimodal path networks to land use planning, cities can create communities with a mix of uses amenities that encourage social engagement and healthy lifestyles conducive to happy living.⁵³

Examining a number of questions directly related to the built environment, a Gallop study looked at the convenience of public transportation, the ease of access to shops, the presence of parks and sports facilities, the ease of access to cultural and entertainment facilities, and the presence of libraries. All were found to correlate significantly with happiness, with convenient public transportation and easy access to cultural and leisure facilities showing the strongest correlation.⁵⁴

D'Acci and researchers in studying what they called underground happiness also found very strong connections between the amenities in the urban environment and happiness. For example recognizing that one lives in an agreeable area/city that has

⁵³ Montgomery, Charles. *Happy City; Transforming our lives through urban design*. New York: Farrar, Straus and Giroux, 2013 p.61-145

⁵⁴ Benfield, Kaid. "The environmental building blocks of urban happiness." *Sustainable Cities Collective*, 2012.

amenities such as nice parks, quality squares, buildings, pedestrian areas, gardens, well designed and beautiful buildings, policies for improving the quality, efficiency and comfort of public transport, low traffic, noise and pollution, is comparable to things such as love, job, money, health, political/economic country situation in improving happiness. These improvements on the average quality of life of citizens from public goods extend beyond time they are using them.⁵⁵ Access to major transport routes and proximity to coastlines specifically have shown a positive effect on well-being and proximity to waste facilities negative effect. ⁵⁶ Leyden and researchers found that cities that provide easy access to convenient public transportation and to cultural and leisure amenities as well as access to cultural amenities, such as movie theaters, museums, and concert halls, along with libraries promote happiness. Cities that are affordable and serve as good places to raise children also have happier residents. Having access to convenient public transportation options also appear to be important. Leyden suggested that these aspects of the built environment affect social connections and connections to places that are important for happiness. ⁵⁷ The Knight foundation broke the necessary recipe to societal happiness in a list of seven ingredients:⁵⁸

1. Feeling safe and secure.
2. Feeling healthy (interestingly, feeling healthy is more important than actually being healthy).

⁵⁵ D'Acci, Luca. "Hedonic Inertia and Underground Happiness." *Social Indicators Research*, 2013: 1237-1259.

⁵⁶ Brereton, Finbarr et.al. "Happiness, geography and the environment." *Ecological Economics*, 2008: 386-396.

⁵⁷ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

⁵⁸ *Soul of the Community 2010*. Research Report, Knight Foundation; Gallup, 2010.

3. Experiencing more pleasure than pain.
4. Feeling a sense of equality and inclusion.
5. Feeling free and empowered.
6. Having economic security, (money matters in happiness).
7. Having strong positive social connections (the most important element).

Number 4 in the Knight Foundation list in particular goes beyond what amenities give a person and identifies an important aspect of access, which is “inclusion.”

Geographical and socio-economic context are important when looking at well-being and happiness, particularly the impact of social and spatial inequalities and social justice.⁵⁹ Striking inequality leads to stigmatization and negative comparisons, which on the individual and community level are harmful to happiness. Self-reported happiness often varies when in put in contrast with various expected outcomes. This is likely why areas with efficient and pleasant transit have higher reported happiness, because riders don’t have to suffer a sense of stigma and discomfort on their daily commute.

Minimizing visible outward differences between income levels in a community is a way to address this issue. This can be through transit and providing quality public spaces for all, but also through housing. The new town of Port Sunlight in the UK has some excellent examples of multiple smaller units combined seamlessly with larger units, to accommodate the different income levels and still give everyone an attractive dwelling that blends into the neighborhood and facilitates access to the same

⁵⁹ Ballas, Dimitris. "What makes a 'happy city'?" *Cities*, 2013: S39-S50.

neighborhood amenities and schools. There was also an effort in Port Sunlight to hire multiple top architects of the time to get a variety of unique housing styles that give the city a distinctive texture and legibility. Notably, the region surrounding the Lever Brothers' famous model village of Port Sunlight region was voted the most desirable place to live in the UK in 2015.

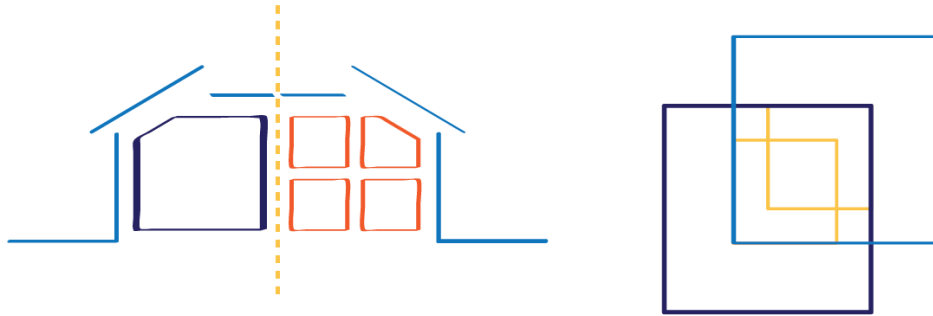


Figure 42 Examples of some of the housing in Port Sunlight, UK. Porter, Martin. Port Sunlight Housing. Digital image. The Greenman. April 2013. Accessed November 2015. <http://thesnufkin.blogspot.com/2013/04/another-world-is-possible-port-sunlight.html>.

Design Implications

Minimizing the visible differences between different income groups in a community as well as providing equitable access to quality amenities can ameliorate the negative comparisons that will incline people to feel dissatisfied.

Mixed income housing without exterior differentiation



Pleasant shared community assets

Figure 43 Comparison in happiness and its design implications. Illustration by Rebecca Habtour

In a city like Baltimore with a large historic housing stock, there is some natural mixture of housing as some rowhomes are subdivided into affordable apartments and some are renovated to become single family housing. Setting policy to help create and retain affordable units that blend into the fabric of the city as development moves forward is vital for building happiness in the city. This approach can build trust building as well as create access and opportunity for all.



Figure 44 Park Avenue east of the site represents a mixture of housing types typical of Baltimore. Image by Rebecca Habtour

Application to Test Case

Thanks to a mix of uses and fairly consistent and transparent urban edges, this part of Baltimore is considered pretty walkable. There are also some really great publicly accessible neighborhood assets. Better visual connections than what currently exist could help to attract people to walk from site to site. A central public intervention as well as street level interventions can help make that happen.

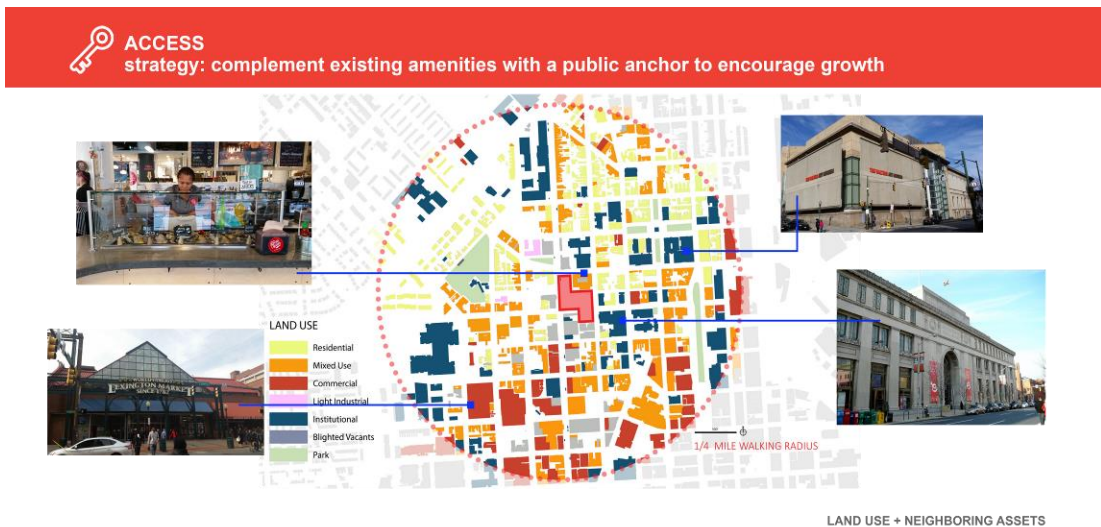


Figure 45 Land Use diagram with a selection of the local markets and public institutions highlighted. All Images by Rebecca Habtour.

This particular site is near light rail, metro and bus stops, which makes it well sited for those willing to use Baltimore's underfunded transit system. Baltimore's many traffic laden one way streets, adjusted over time for maximum automobile flow, encourage racing behavior and can become quite loud and dangerous during much of the day.

ACCESS
 existing conditions: light rail, metro + bus transit assets | heavy vehicle traffic



Figure 46 Available transit and vehicle noise pollution mapped. The decibel study taken with the Sound Meter App. Images by Rebecca Habtour

ACCESS
 strategy: reclaim space from autos for pedestrians and bikes

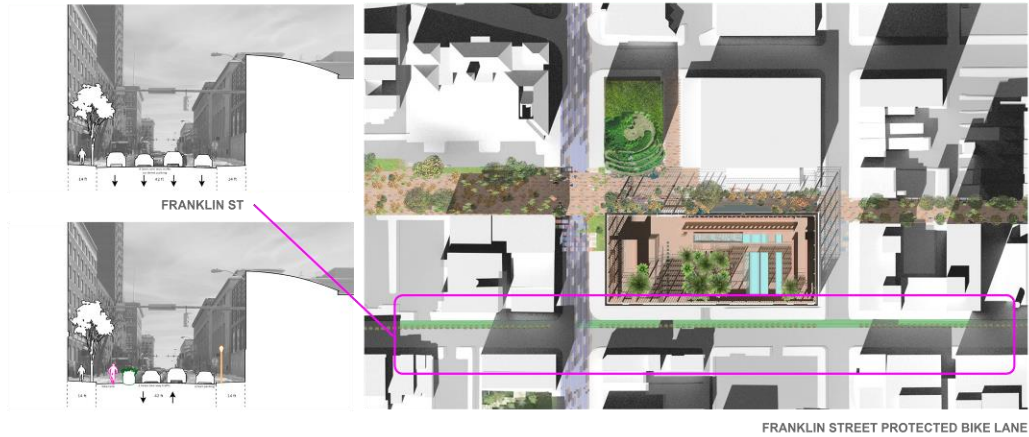


Figure 47 Franklin St intervention to reclaim auto space for a bicycle greenway. Images by Rebecca Habtour

Franklin St., which becomes a 4 lane highway at rush hour, connect to the famous highway to nowhere to the west and across the viaduct and eventually to Pulaski highway to the east. As a connector stretching the width of the city, Franklin St is a good candidate for intervention. The proposal is to take and protect one lane with a planted buffer providing space for bikes, narrowing the crossing for pedestrians and

slowing traffic. I'd also recommend traffic slowing measures, such as a return to a two way street and human scale lighting placed at frequent intervals to replace the higher auto oriented floodlighting.

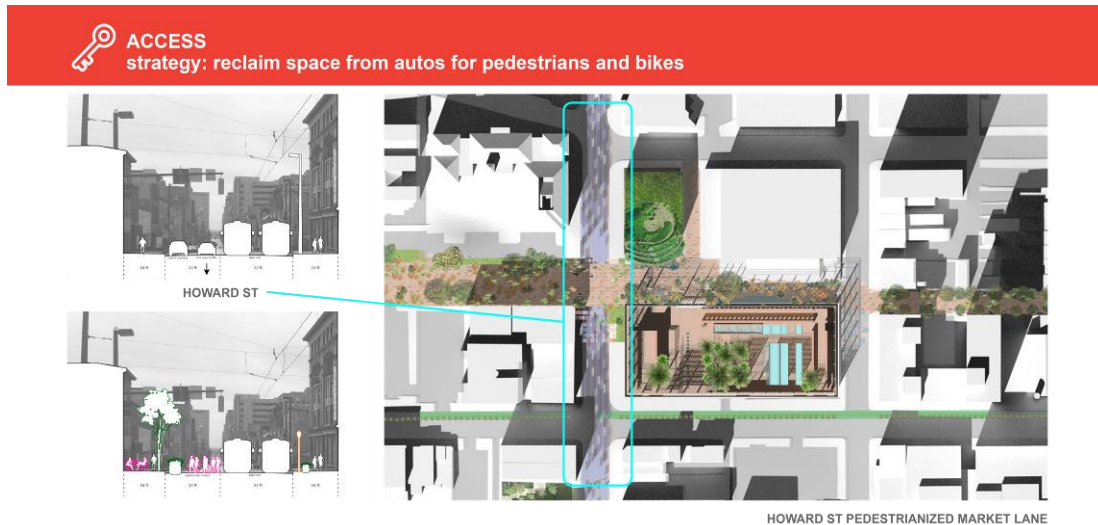


Figure 48 Howard street intervention, turning and old commercial boulevard into a pedestrianized market lane. Images by Rebecca Habtour

Howard St was historically one of the most popular shopping boulevards in Baltimore. Currently a long string of mostly blighted buildings, there are some signs of revival with artists moving in and a few businesses taking a chance on the beautiful older buildings. As redevelopment grows, I'm proposing the street be mostly closed off from vehicles during shopping hours and the whole street given a distinctive paving pattern that leads people down through the city. Outside seating, vending, plantings, and busking can be encouraged. The street has the potential to be similar to Istiklal Caddesi in Istanbul, with the light rail rolling through slowly as people walk from shop to shop, or restaurants, bars and cinemas and maybe pause to take in a street musician, or just sit, sip coffee and watch the world roll by.



ACCESS

strategy: reclaim space from autos for pedestrians and bikes



Figure 49 Howard street intervention, turning an old commercial boulevard into a pedestrianized market lane. Images by Rebecca Habtour

Access Strategies

Complement existing amenities with a public anchor to encourage growth

Reclaim space from autos for pedestrians and bikes.

Improve and extend the transit network .

Connect transit and transportation decisions with land-use decisions.

Promote greater mixes of uses and incomes through zoning codes.

Protect housing affordability as the city is redeveloped.

Choose to not provide ample parking.

Invest in street slowing and greening measures.

Identity

Selected Findings



PEOPLE ANCHOR EMOTIONS TO DISTINCTIVE PLACES
WHERE THEY SHARE EXPERIENCES WITH OTHERS

NOSTALGIA HELPS FOSTER EMOTIONAL CONNECTIONS

CONNECTIONS TO PLACES BECOME MEANINGFUL
PARTS OF INDIVIDUAL & COMMUNITY IDENTITY

The world is so empty if one thinks only of mountains, rivers & cities; but to know someone who thinks & feels with us, & who, though distant, is close to us in spirit, this makes the earth for us an inhabited garden.

- Johann Wolfgang von Goethe

People anchor their emotions to places where they live, particularly places they've shared experiences with others. People are often connected to quality places that are cultural and distinctive.⁶⁰ Connections to places can become meaningful parts of your identity and a strong sense of self is a trait of a happy person. Connection to place is a strong predictor of happiness. People form emotional attachments with physical places which can inform a sense of happiness with those places.⁶¹

⁶⁰ Benfield, Kaid. "The environmental building blocks of urban happiness." *Sustainable Cities Collective*, 2012.

⁶¹ Dallimer, Martin et al. "Biodiversity and the Feel-Good Factor: Understanding Associations between Self-Reported Human Well-being and Species Richness." *BioScience*, 2012: 47-55.

Attachments grow most to places that fulfill people's emotional needs, for example, places that enable restorative experiences.⁶² In a study examining two spatial contexts in Southern California, the wildland-urban interface outside of San Diego and Los Angeles, researchers found strong empirical support suggesting that a person's identification processes, where they assimilate an aspect or attribute of place, drive the affective (emotional) and conative (acting) elements of the brain that underlie people's attachment to physical environments. People want to be known and understood by others according to their beliefs and feelings about themselves. That process of self-verification underscores the connections between place experience, social interaction and the individual. The quality of an experience or spatially anchored relationships can imbue a particular place with sentiment.⁶³ That feeling of connectedness is a key factor in predicting happiness. People are often connected to quality places that are cultural and distinctive and that can facilitate both human social connections and relationships. A study by Kevin Leyden and research associates measuring the relationships between happiness and that the way cities and city neighborhoods are designed presents empirical support indicating that feeling connected to the people and the places of the city are very important for the happiness of urban residents.⁶⁴

People also build connections through narrative and cultural understanding. David Halpern, conducted an experiment in which he had a group of volunteers, some of

⁶² Herzog, Thomas, and Sarah Strevey. "Contact with Nature, Sense of Humor, and Psychological Well-Being." *Environment and Behavior*, 2008: 747-776.

⁶³ Kyle, Gerard et al. "Repositioning Identity in Conceptualizations of Human-Place Bonding." *Environment and Behavior*, 2014: 1018-1043.

⁶⁴ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

whom were architecture students, rate the attractiveness of a series of images of human faces and buildings. All the volunteers had the same general response to the human faces, however, the longer any one of them had studied architecture, the more his or her taste diverged from the crowd. Virginia Tech neurobiologist Ulrich Kirk and his colleagues used fMRI machines to see how architects and non-experts would react to pictures of buildings. An architect's medial orbitofrontal cortex (the reward center for decision making) lit up much brighter than the same region in the non-expert's brain. The architect's hippocampus (memory storage) was also more fully activated. Exposure to cultural information can change the way our brains function, and alter the way we experience things. Our brains are stretched and shaped by the synergy of memory, culture, and images. Changes in the one's mental library of stories can shape ever shifting tastes. 'Spaces' transform into 'places' when they take on emotional meaning. Weinstein et al. explored this idea in a series of studies and found that psychological needs satisfaction of competence, autonomy, and relatedness, experienced in different spaces, fosters feelings of happiness, which in turn shape perceptions of physical beauty. Autonomy and relatedness in particular were strong correlates. When individuals recalled connectedness with others in a space, or when they felt themselves to be self-directed in a space, they experienced those spaces as being more beautiful. The experiences that a space frames are likely as important to perceptions of beauty as formal design parameters such as form, line, variety and unity.

Application to Test Case

This part of Baltimore's rich historic fabric lays the ground work for strong emotional connections, and it also happens to be the site of Baltimore's first Natatorium which was known in the 1880s as the 'best lil swimmin hole' in these parts.



Figure 50 Historic Qualities of Site. West Franklin & Howard St. 1915 Hughes Company, PP8 Hughes Company Photograph Collection, Z9.399.PP8, MdHS., Natatorium. Howard Street, Baltimore, ca. 1880-1900. Subject Vertical File, MdHS., Franklin & Howard St 2015, Howard Street fire. 500 block, North Howard Street, Baltimore. September 24, 2014. Digital photograph by James Singewald, Site diagram image by Rebecca Hattour.

Architecture can reference the past and trigger nostalgia, while still being authentic to the present. For this building a more contemporary glass box contains a brick arcade that evokes some of Baltimore's brick architectural tradition, as well as hearkening back to a more ancient water structures, the baths and aqueducts of the Roman empire.



IDENTITY

strategy: trigger nostalgia by referencing both Baltimore & Roman brick arch traditions



REFERENCING TRADITION WITHOUT SHIRKING MODERNITY

Figure 51 Sectional view of the proposed architectural intervention. Image by Rebecca Habtour



Figure 52 A small sampling of the variety of brick and stone archways found on one side of the street in one city block in Mt. Vernon Baltimore. Baltimore is known as a brick town. Images by Rebecca Habtour



Figure 53 Archways in the Roman Baths in Bath, UK. Image by Rebecca Hattour

This approach allows this building to be very distinctive in the neighborhood, while still complementing the surrounding context in scale and materiality.



Figure 54 Elevation of the test building in context, showing contrast and distinction, material relationship, scale relationship, and building proportions.

As a public facility, ideally it should be an active space day and night. The spaces can be used for a variety of community and private events. Palm houses are often popular wedding and party venues, which use may help subsidize operating costs. To increase a wider variety of use and access, there could be a public / private programming barter system instituted, where artists, organizations, and individuals of complementary disciplines could use the flexible event spaces inside the palm house at a reduced rate in exchange for providing programming on a regular basis, for example fee based yoga classes could be held there in exchange for the instructor offering free community yoga classes at regular intervals. Similar arrangements with artists offering drawing classes, musicians putting on concerts, authors offering readings, dancers offering classes or performances, could really enliven the space. As a public facility it could also host community meetings and encourage local political activity, acting as a true hub for meeting, building networks, sharing local knowledge. Being adjacent to a High School and Senior Center, there are great opportunities for special educational programming and activities for both students and seniors.



IDENTITY

strategy: program to facilitate a variety of experiences

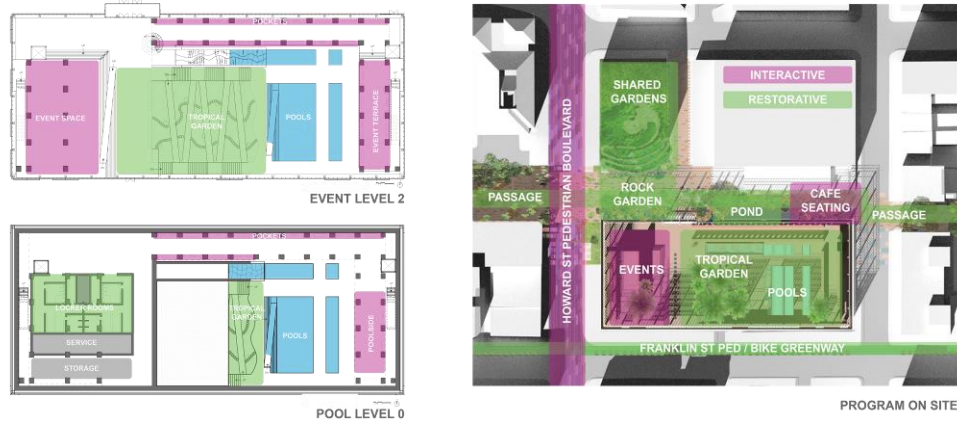


Figure 55 Building and site plans highlight more interactive event and social spaces in pink and more restorative garden and swimming spaces in green. The pools and waterfall are represented in blue. Images by Rebecca Habtour.

Strategies

Build upon the history and story of the site and surrounding areas.

Trigger nostalgia by referencing local colloquial traditions in form, materiality, and art.

Create something distinctive that can act in contrast to as well as a complement to the local fabric.

Program the building and site to facilitate a variety of experiences and invite a broad range of people.

Include some aspect in the architectural project that invites the public to participate.

Leverage local art and artists to add meaning and iconic moments to the space.

Selected Findings



TRUSTING OTHERS CORRELATES WITH HAPPINESS

PUBLIC SPACES SUPPORT SOCIAL INTERACTION
THROUGH TRIANGULATION, SEATING, GREENING & PLAY

EGRESS & GATHERING OPTIONS OFFER INDIVIDUALS
CONTROL OVER INTERACTIONS

There is no logic that can be superimposed on the city; people make it, and it is to them, not buildings, that we must fit our plans.

— Jane Jacobs

How much you trust others particularly correlates with your happiness. And trust building works best face to face. What this means for planning and design is that we need to create environments and opportunities for people to feel safe to interact and build trusting relationships, not just with romantic partners, family, and close friends, but also with neighbors, and casual acquaintances. Friendly interactions with people you meet on the street can give a positive oxytocin boost without the added burden you get from your more serious relationships.⁶⁵ For the public sphere, much can still be drawn from Willian Whyte's famous studies in New York, both that quality public

⁶⁵ Montgomery, Charles. *Happy City; Transforming our lives through urban design*. New York: Farrar, Straus and Giroux, 2013. p. 54

spaces are vital to a city's social life and that triangulating, for example placing a seat, some plants and a fountain near each other, create a place people want to inhabit.



Figure 56 Greenacre Park in NYC was one of William Whyte's study areas. A heavily used space that shows off the effect of triangulation. Carpenter, Jot D. Greenacre Park, NYC. Digital image. OSU.EDU. Accessed November 2015. <https://ksamedia.osu.edu/item/13945>.

One of the elements identified by psychology that can boost happiness for the long term is marriage, or a long term relationship.⁶⁶ However all kinds of social interaction has been to shown to boost happiness in the short term. There is considerable existing literature that consistently identifies health, wealth, and social connectedness as key predictors of happiness.⁶⁷ Designing spaces with the intent to improve social interaction and build relationships is a valuable approach to designing for happiness. Places can facilitate human social connections and relationships.

⁶⁶ Nettle, Daniel. *Happiness; the science behind your smile*. New York: Oxford University Press, Inc., 2005

⁶⁷ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.

Nordh et al. in their study of pocket parks identified several preferred park activities: relaxing, philosophizing, reading, social play, physical activities, eating / drinking and also noted that short informal contacts are highly important to well-being.⁶⁸

As Putnam put in in his research on social capital, “happiness is best predicted by the breadth and depth of one’s social connections”⁶⁹

Places that foster social connections can improve happiness and enhance the attractiveness of living in the city. On the urban scale social connections are found in more walkable, mixed-use places. Also there is a significant relationship between happiness and access to cultural amenities, such as movie theaters, museums, and concert halls, along with libraries. These aspects of the built environment affect social connections and arguably connections to place that are important for happiness.⁷⁰ On an architectural scale, creating spaces where people can sit and see each other face to face creates the best opportunity for connection. It is important that seating facilitates that, either by being arrangeable or established to encourage connection. One creative approach to creating urban furniture that is social are these rocking street benches by City Lab which force users to interact.

⁶⁸ Nordh, Helena, and Kjersti Østby. "Pocket parks for people – A study of park design and use." *Urban Forestry & Urban Greening*, 2013: 12-17.

⁶⁹ Putnam, RD "Social Capital: Measurement and Consequences." *Isuma: Canadian Journal of Policy Research*, 2001: 41-51.

⁷⁰ Leyden, Kevin et al. "Understanding the Pursuit of Happiness in Ten Major Cities." *Urban Affairs Review*, 2011: 861-888.



Figure 57 City Lab rocking bench city furniture

There is an element play there, but there is also an element of awkwardness. Often spaces are designed for efficiency, but there is potential in spaces that are a little awkward. Pleasant unpredictability that influences social activity, like the City Lab rocking bench relates integrating surprise into design.

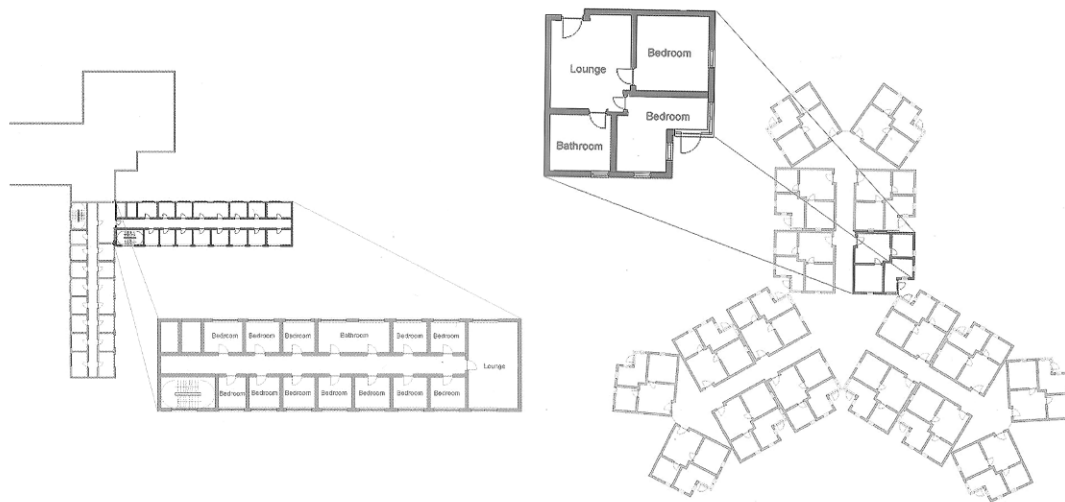
People can be the source of our greatest joys or our greatest unhappiness. When we are able to exert some control over our interactions with others we are happier.

Architecturally this expresses itself through providing a variety of options for egress and gathering. This is so people don't feel forced to confront the masses all at once, and they can step aside to escape, relax, or chat in a safe pocket, sort of like a public front porch.

A particularly powerful study of this environmental effect was done on student dormitories.⁷¹ Students living in a classic double-loaded corridor design were contrasted with those living in a suite design. The double loaded corridor had 15-20

⁷¹ Halpern, David. "An Evidence-Based Approach to Building Happiness." In *Building Happiness*, by Jane Wernick, 70-81. London: Black Dog Publishing, 2008.

bedrooms that opened up onto the long corridor with a block of bathroom facilities in the center. The suite design had clusters of 3 bedrooms with a small lounge and toilet between them. This was an American University and in both designs there was 2-3 students per room.



Opposite and above Corridor and suite design dormitories from Baum and Valins, 1977.

Figure 58 Corridor and suite design dormitories from Baum and Valins 1977 study. Halpern, David. "An Evidence-Based Approach to Building Happiness." In *Building Happiness*, by Jane Wernick, 70-81. London: Black Dog Publishing, 2008.

Despite there being no difference in the student populations initially, those living in the corridor design began to complain about the excessive, unwanted and uncontrollable interactions with fellow students, and exhibited more withdrawal. The researchers also found that those patterns of withdrawal generalized to other settings, for example in a waiting room elsewhere on campus. Corridor residents sat further away from others, avoided eye contact and initiated fewer conversations. Even with all this avoidance behavior, corridor residents self-reported feeling more stressed in the presence of a stranger. Corridors are not conducive to social interaction. There are no windows or views out and it cannot function for anything apart from travel. In

contrast those in the clustered suites were more relaxed, more social, more likely to retain the same roommate, and they exhibited these more social behaviors in other contexts as well. The clustered housing offered multiple separate exits and entrances, as well as semi-private spaces for more comfortable social interactions. Dovetailing with nature’s effect on restorative happiness and sustainability, urban green spaces have also been shown to encourage bonding between neighbors, provide a greater sense of safety, and reduce urban ills such as crime and violence.⁷²

Application to Test Case

Ideally a selected site for a major intervention should be a location that can be used to build trust between diverse, often segregated, demographics.

This site is at a threshold of several different demographic groups:

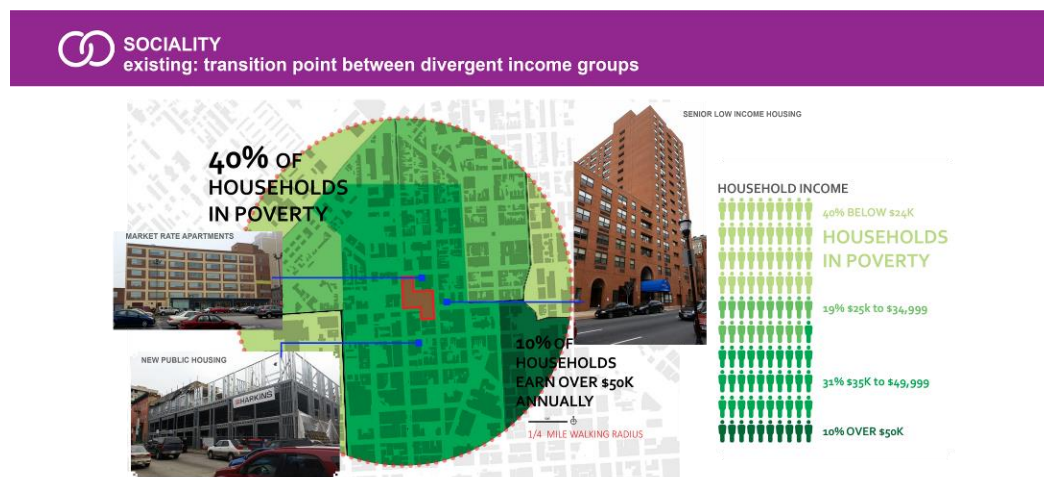


Figure 59 Household incomes within a 1/4 mile of the site. Images by Rebecca Habtour

⁷² Montgomery, Charles. *Happy City; Transforming our lives through urban design*. New York: Farrar, Straus and Giroux, 2013. p.110



SOCIALITY
existing: transition point between racial groups | wide mix of age groups

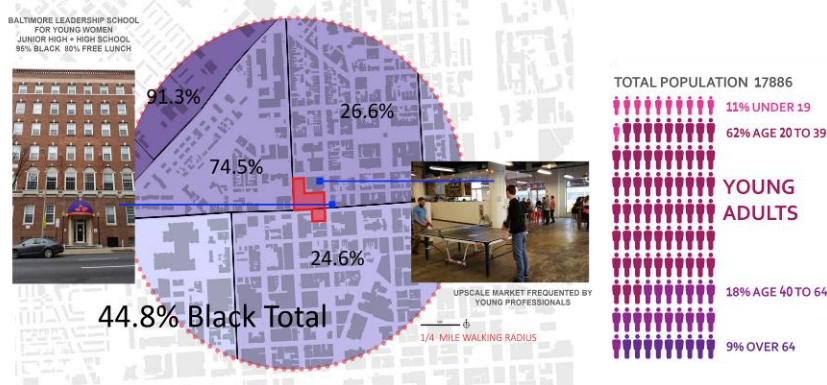


Figure 60 Race and Age breakdown of population within 1/4 miles of the site. Images by Rebecca Habtour

Within the building the strategy was implemented to provide multiple options to flow around a space, as well as a variety of places aside for people to stop, hang out and chat. There is a minimum of two forms of egress from every part of the building, often more. There is a long ADA compliant low slope ramp that moves from the upper level event space all the way to the pool floor weaving through the palm gardens. The arcade has seating opportunities within several of the arches, there is some seating nestled into the palm gardens and lounge and sunning areas around the pool.



SOCIALITY
strategy: multiple legible egress options | variety of places to linger

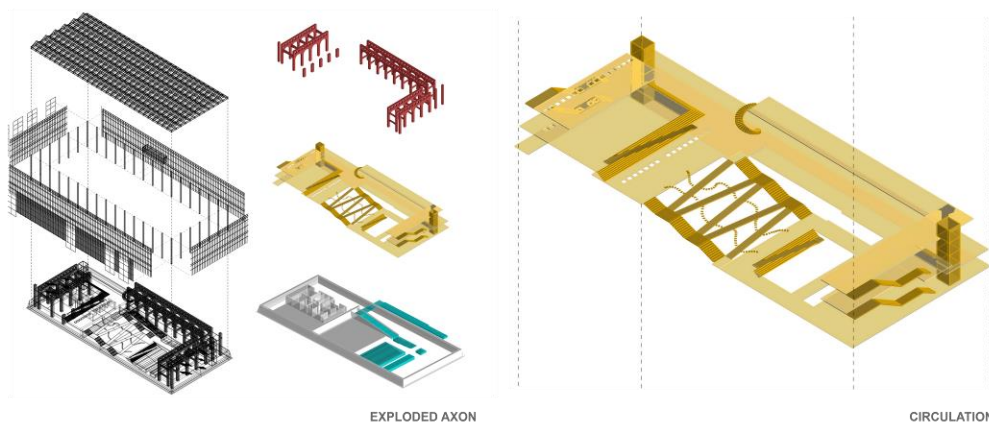


Figure 61 Exploded axonometric drawing showing the structure and organization of the building, with a close up of the circulation areas. Images by Rebecca Habtour.



SOCIALITY

strategy: multiple legible egress options | variety of places to linger



Figure 62 View of the building interior from the entry level looking east. Image by Rebecca Habtour

Sociality Strategies

Provide frequent and legible egress options.

Provide a variety of pleasant spaces for people to escape to, linger and socialize.

Set illustrated form-based policies in downtown areas that utilize Whyte's recommendations for streets and public spaces.

Adjust zoning to allow for more mixed-use areas.

Invest in community social activities and frameworks, like festivals, community gardens, and community schools.

Implement traffic slowing measures on city streets.

Chapter 5: Synopsis of Findings

Chapter 5: Lessons Learned

All Strategies Compiled



NATURE

Build a network of greenways.

Connect and improve city parks.

Invest in quality green intervention at key positions.

Bring biodiversity to human level.

Increase frequency of green interactions of all kinds and scales.

Provide people places to linger and sit among nature.

Create a unique bio-climatic experience for the public.

Maximize natural assets on the site through sustainable measures such as natural ventilation and rainwater capture.



LIGHT

Provide a variety of natural light experiences

Utilize colored solar glass for unique light filtration and energy production

Utilize nature for unique light filtration



SURPRISE

Integrate moments of impractical beauty into every project.

Incorporate artwork that is engaging and interactive.

Use natural features like rock gardens and water features to invite discovery and play.



ACCESS

Complement existing amenities with a public anchor to encourage growth

Reclaim space from autos for pedestrians and bikes.

Improve and extend the transit network .

Connect transit and transportation decisions with land-use decisions.

Promote greater mixes of uses and incomes through zoning codes.

Protect housing affordability as the city is redeveloped.

Choose not to provide ample parking.

Invest in street slowing and greening measures.



IDENTITY

Build upon the history and story of the site and surrounding areas.

Trigger nostalgia by referencing local colloquial traditions in form, materiality, and art.

Create something distinctive that can act in contrast to as well as a complement to the local fabric.

Program the building and site to facilitate a variety of experiences and invite a broad range of people.

Include some aspect in the architectural project that invites the public to participate.

Leverage local art and artists to add meaning and iconic moments to the space.



Provide frequent and legible egress options.

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Set illustrated form-based policies in downtown areas that utilize Whyte's recommendations for streets and public spaces.

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Invest in community social activities and frameworks, like festivals, community gardens, and community schools.

Implement traffic slowing measures on city streets.

Significance of Work Moving Forward

The potential for finding direct design and policy application of scientific studies exploring the environmental and experiential elements that help boost human happiness is significant. The strategies identified here are just a small sampling of the possibilities for bringing happiness into any design project. Urban designers, architects and planners can apply this knowledge through policy decisions and design that give greater priority to integrating nature in meaningful ways, that thoughtfully filter natural light in a variety of ways, that offer up surprises through incorporating art and play into each project, that ensure access to the benefits of the city to every

demographic, that ensure that non-auto forms of travel get just as much investment and attention as auto travel does, that create something distinctive to anchor emotions and identity to, and that provide safe and varied options that encourage positive social interaction. Much of America's pursuit of happiness thus far has not proven effective and has in fact increased inequities. These struggles will broaden as the impacts of urban disinvestment wear away even further at our city infrastructures, natural environments and social structures. Design for happiness has synergies with crime reduction, sustainability, and public health. As this research, these factors, and these kinds of strategies are brought to the attention of architects, urban designers and planners, they can approach their design and city shaping policy work with an eye towards making people happy, which is a noble pursuit indeed.



Figure 63 Interior perspective of the test building. Image by Rebecca Hattour

When you have once seen the glow of happiness on the face of a beloved person, you know that a man can have no vocation but to awaken that light on the faces surrounding him. In the depth of winter, I finally learned that within me there lay an invincible summer.

- Albert Camus

Appendix 1

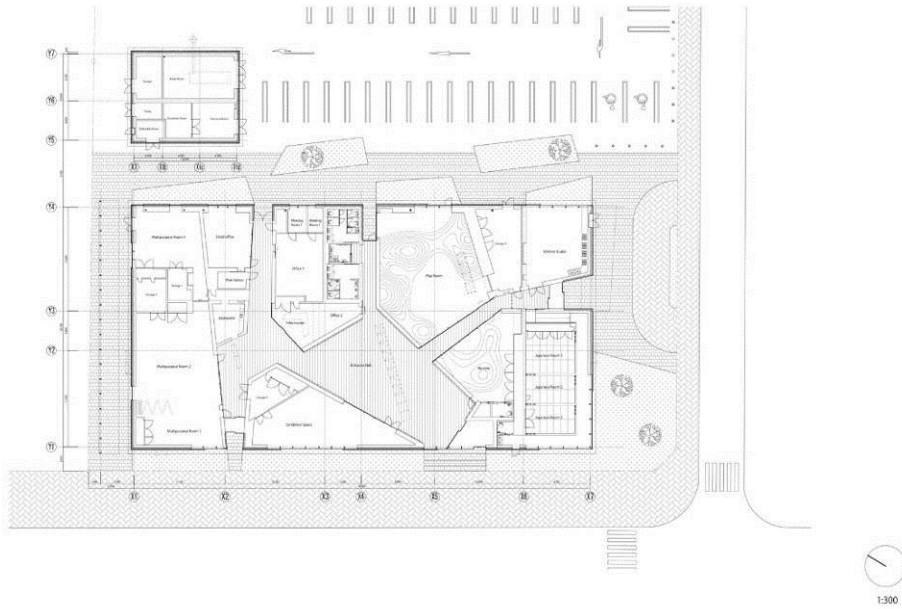
Program from Community Center Precedents

Towada Community Plaza / Kengo Kuma & Associates

<http://www.archdaily.com/625914/towada-community-plaza-kengo-kuma-and-associates>

notes: great space for play and surprise, areas arrange to allow adults to observe play spaces.





Service -- meters

Storage 178 ft²

Boiler Room 469 ft²

Pump 64 ft²

Generator Room 142 ft²

Electrical Room 234 ft²

Grilled Kiln Room? 76 ft²

Pod 1 –

Multipurpose Room One 661 ft²

Multipurpose Room Two 1083 ft²

Multipurpose Room Three 606 ft²

Kitchenette 165 ft²

Storage Room One + Storage Room Two 296 ft²

Small office 388 ft²

work station 80 ft²

Pod 2 –

Storage 4.5 x 6 = 27 sqm

Exhibition Space 2.52 x 4.5 = 11.34 sqm

Pod 3 –

Office 500 ft²

Information 250 ft²

Office two 150 ft²

Restrooms M/W/Disabled (7 toilets, 3 urinals) 179 ft² each

Pod 4 –

Play Room 1794 ft²

Storage 454 ft²

Kitchen Studio 691 ft²

Pod 5—

Nursery 718 ft²

Restrooms (2 toilets), Handicapped (1 toilet) 80 ft², 80 ft²

Japanese Rooms One, Two, Three 319 ft², 217 ft², 219 ft²

Entrance Hall 1988 ft²

Pod 6—

Exhibition Space 718 ft²

Storage 871 ft²

Chalco Community Center / Solis Colomer Arquitectos

<http://www.archdaily.com/381542/chalco-community-center-solis-colomer-arquitectos>

*notes: This facility has a varied social program, from childcare, community center, training center, local celebration venue, to name a few. This is why this building has become a widely accepted facility for the inhabitants, who have managed to recognize it as an important landmark of the place.
Classrooms, cafeteria, multipurpose room, chapel.*



Casal de la Juventud de Novelda / Crystalzoo

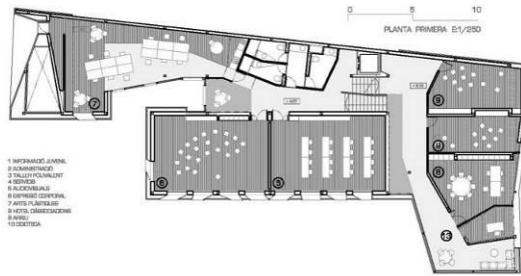
<http://www.archdaily.com/165642/casal-de-la-juventud-de-novelda-crystalzoo>

notes: meeting rooms with flexible spaces, interesting approach to solar shading and fenestration. Some spaces have awkward choke points.



PLANO 1: PLANTAS 1/250

PLANTA SEGUNDA E1/250



PLANTA PRIMERA E1/250

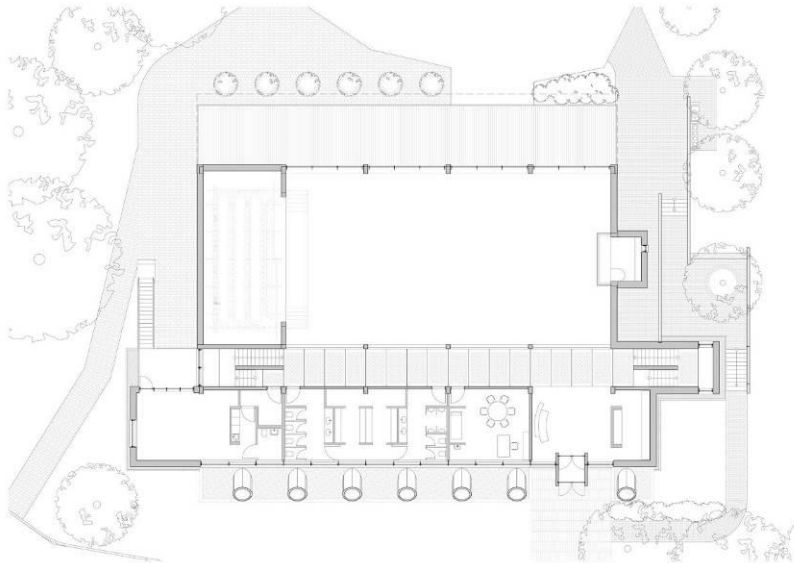


- 1 Program computer lab 602 ft²
- 2 Offices 291 ft²
- 3 Multipurpose workshop 877 ft²
- 4 Restrooms 245 ft²
- 5 Audio Visual 593 ft²
- 6 Body Language (Dance) 602 ft²
- 7 Visual Arts 821 ft²
- 8 Meeting Room 1 311 ft²
- 9 Meeting Room 2 234 ft²
- 10 Youth Space 928 ft²

Community Center in Zimmern / Ecker Architekten

<http://www.archdaily.com/32716/community-center-in-zimmern-ecker-architekten>

notes: Built to house cultural events in a town with active club membership, this hall also hosts sporting events and seasonal festivals. A composite use required flexibility, durability, and safety. Seating 500, the project houses a youth club, offices for local officials, and the town doctor. Simple organization makes it very legible. Open corridor overlooking the event space is very welcoming.



Program

Cultural Hall (seats 500) 2143 ft²

Stage 525 ft²

Scoreboard 72 ft²

Wide Corridor 738 ft²

Meeting Room I 273 ft²

Kitchenette 29 ft²

Bathroom (1 toilet) 28 ft²

Storage 42 ft²

2 Larger Bathrooms (4 toilets + 2 toilets, 4 urinals) 117 ft² each

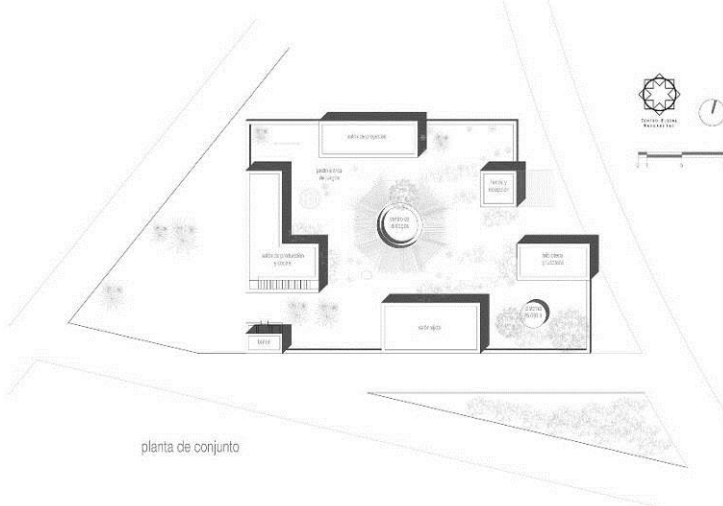
Shared Locker room 193 ft²
Doctors Office 214 ft²
Meeting Room II 326 ft²

Next

Las Margaritas Social Center / Dellekamp Arquitectos + TOA Taller de Operaciones Ambientales + Comunidad de Aprendizaje

<http://www.archdaily.com/492794/las-margaritas-social-center-dellekamp-arquitectos-toa-taller-de-operaciones-ambientales-comunidad-de-aprendizaje>

notes: Community center for dialogue, circular shape is conducive to gathering and discussion. Each specific use radiates from this central moment.



Program --

Production Hall and Kitchen 708 ft²

Restroom 93 ft²

Communal Living Room 538 ft²

Dialogue Center 914 ft²

Cistern 83 ft²

Library & Toy Library 286 ft²
Shop & Reception 121 ft²
Project Center 382 ft²
Garden & Playground 809 ft²

Cherry Hill Fitness and Wellness Center – Baltimore, MD

notes: Space feels fairly mundane, very little surprise. The central corridors feels a little constrictive, likely not a great light situation in the corridor. Good to get a sense of the kind of space the City of Baltimore is paying for currently. Looks like they may get pleasant views out of the windows. Sports fields, but no apparent gardens.

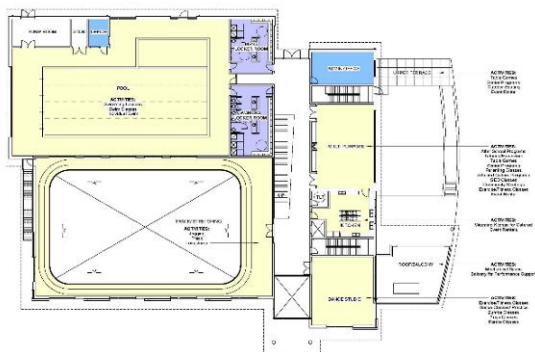


Cherry Hill Fitness and Wellness Center
Estimated Completion Spring 2017



1 FIRST FLOOR PLAN
10/17/16

Cherry Hill Fitness and Wellness Center



2 SECOND FLOOR PLAN
10/17/16

Cherry Hill Fitness and Wellness Center

Floor 1 –
Gym 6700 ft²

Men's Locker Room 519 ft²
Women's Locker Room 697 ft²
Electrical, Mechanical 642.2 ft²
Computer 832 ft²
Fitness 680 ft²
Storage One, Storage Two 365 ft²
Recycling 95 ft²

Office 213 ft²
Lobby 481 ft²
Activity Room 946 ft²
Art & Craft 1041 ft²
Fitness 680 ft²
Computer 832 ft²
2nd Floor Plan –
Pool Room 10182 ft²
Pool Large 4084 ft²
Pool Small 710 ft²
Pump Room 613 ft²
Pool Storage 165 ft²
Pool Office 192 ft²
Track 12634 ft²
Men's Locker Room 835 ft²
Women's Locker Room 1115 ft²
Admin Office 764 ft²
Multipurpose 1990 ft²
Kitchen 1091 ft²
Dance Studio 1630 ft²
Circulation 2841 ft²
Roof / Balcony 1344 ft²

Chongqing Taoyuanju Community Center / Vector Architects

<http://www.archdaily.com/776435/chongqing-taoyuanju-community-center-vector-architects>





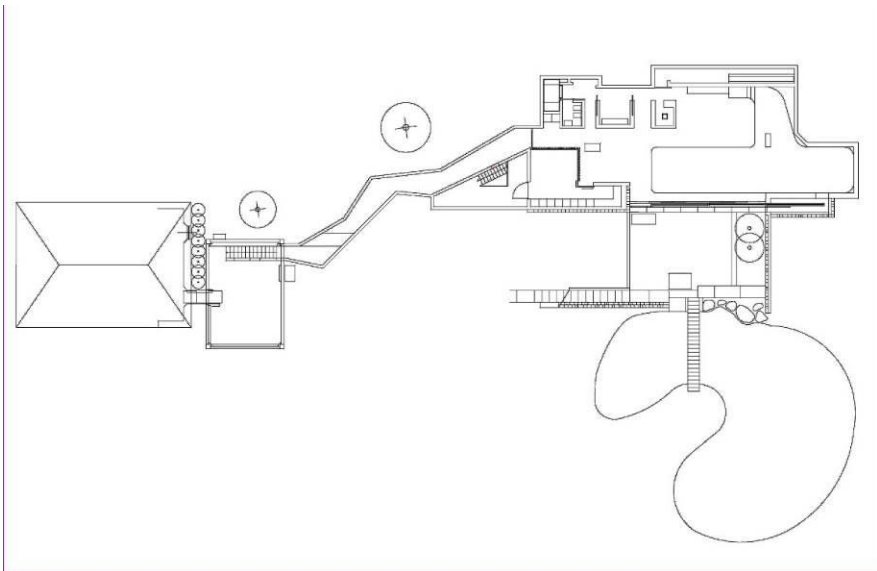
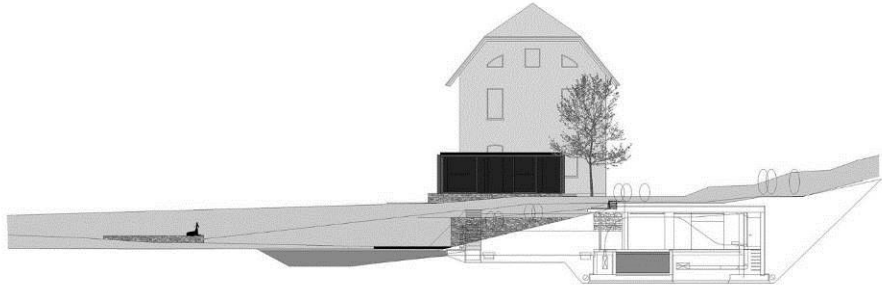
Program

Resting Area 2684 ft²
 Chess Room 409 ft², 782 ft² per room, 7907 ft² total
 Aerobics area 3569 ft²
 Gym 1872 ft²
 Spinning Room 1103 ft²
 Yoga Room 2900 ft²
 Outdoor Swimming Pool 6400 ft²
 Outdoor Pool Space 14664 ft²
 Cultural Center (all the bits) 37446 ft²
 Restaurant 5305 ft²
 Community Health Center 17583 ft²

Roccolo's Swimming Pool / act_romejalli

http://www.archdaily.com/637043/roccolo-s-swimming-pool-act_romejalli

notes: Private pool. Looks out over outdoor marshy pool, gives the appearance of a natural connection. Shielded by stone walls, it digs into the hill and has a sense of privacy and enclosure. The interior has a relatively simple plan with just the necessities, two of which are left as boxes in the space.



Program

Small Indoor Pool 316 ft²
Pool room 600 ft²
Kitchenette 96 ft²
Waterfall Shower 12 ft²
Changing Room 29 ft²
Service Room 53 ft²
Bathroom 24 ft²
Back Room 98 ft²

Next

The Arc at Bandar Rimbayu / Garis Architects

<http://www.archdaily.com/773274/the-arc-at-bandar-rimbayu-garis-architects>

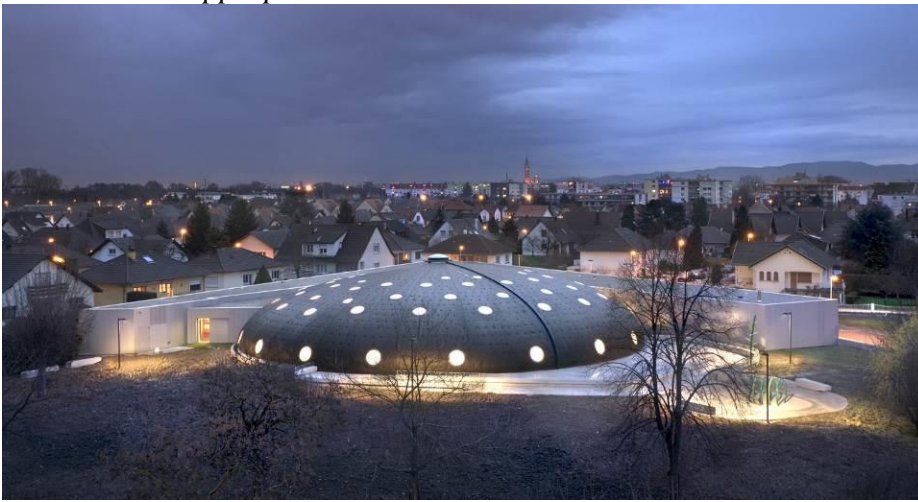
notes: Programmatically not strongly relevant, but the approach to green walls, nature under the stairs, and green shading work well for the thesis topic.

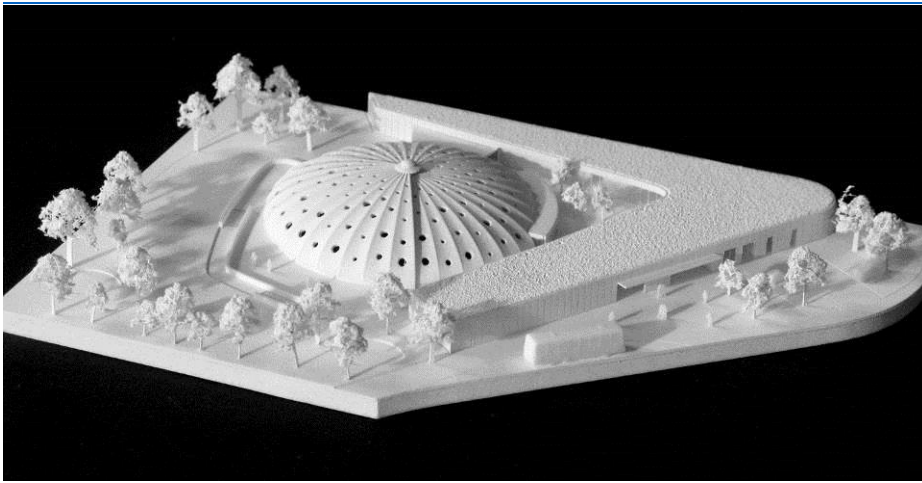




“Tournesol” Swimming Pool / Refurbishment by Urbane Kultur
<http://www.archdaily.com/598269/tournesol-swimming-pool-refurbishment-urbane-kultur>

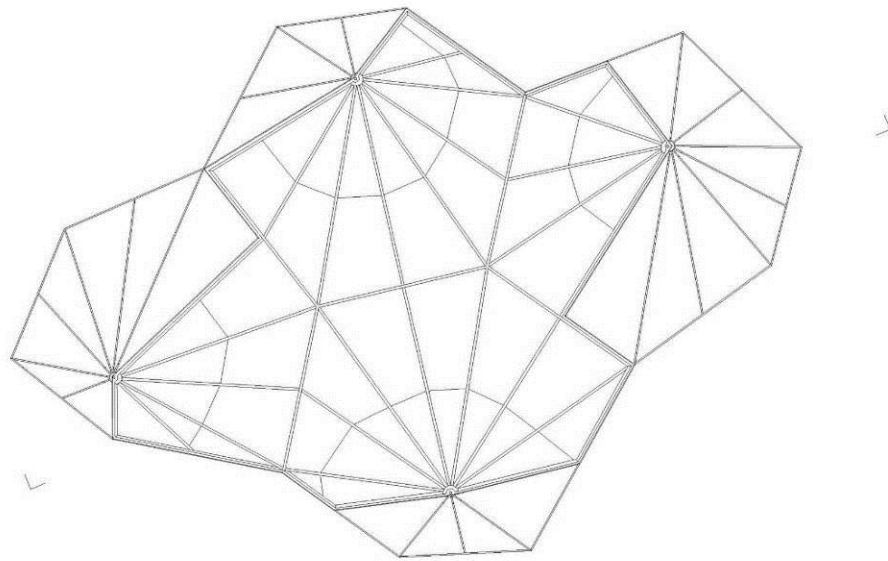
notes: Plays up the idea of surprise well. Allows it to be flexible and open to the weather when appropriate.





Greenhouse Botanical Garden Groningen – idA

*notes: A unique shape, could work really well as a pavilion in a larger park.
Retaining the texture of the walkway from outside to in is a nice touch.*



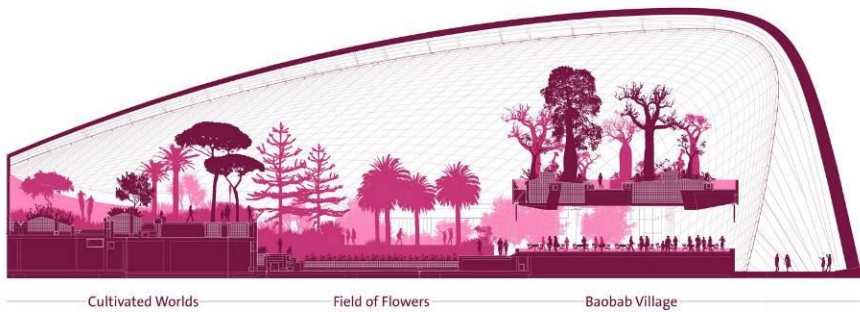
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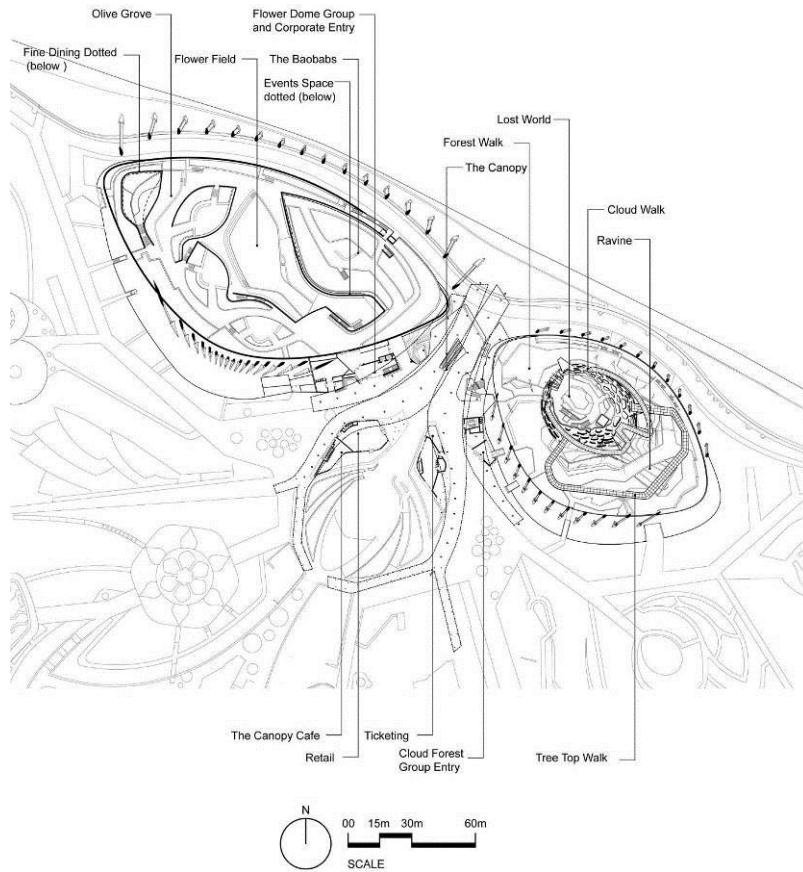


Greenhouse 1816 ft²

Cooled Conservatories at Gardens by the Bay -Wilkinson Eyre Architects

notes: Large city serving intervention, appears to be widely popular and draws many tourists as well as locals. An interesting precedent for sun shading and cooling mechanisms. and the idea of a long spiraling promenade through nature.

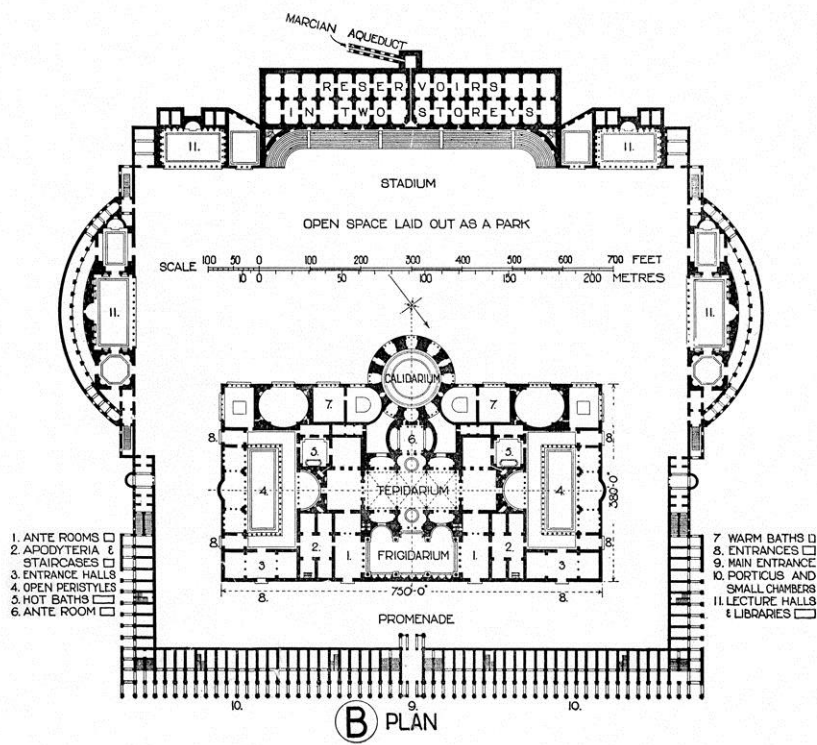




- Restaurant 4208 ft²
- Flower Field 10905 ft²
- Event Space 27606 ft²
- Lost World (tower of plants) 11831 ft²
- Ravine 8454 ft²
- Cafe / Retail 3790 ft²

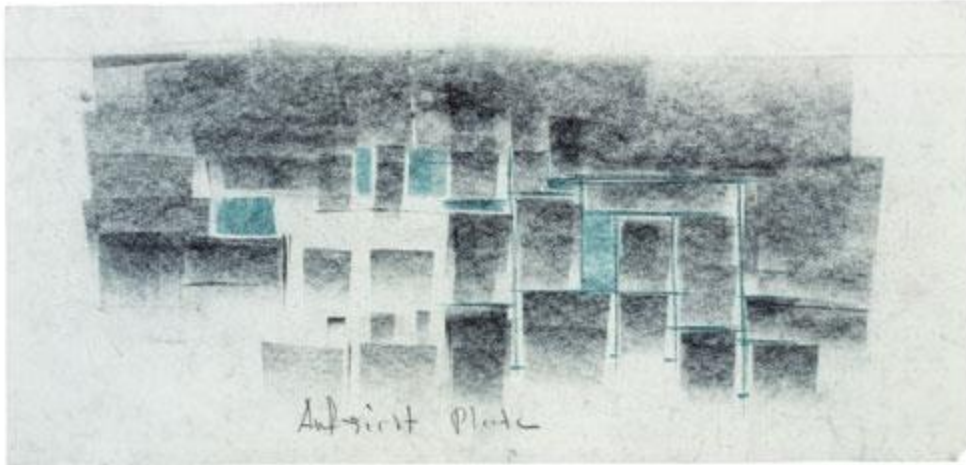
Roman Baths at Caracalla

notes: Major Roman community center, revolving around the bath complex. Program puts hot and cool rooms in succession placing furnaces adjacent to need. Other elements include libraries, exercise spaces and places to eat. The waiting/ in between spaces are important.



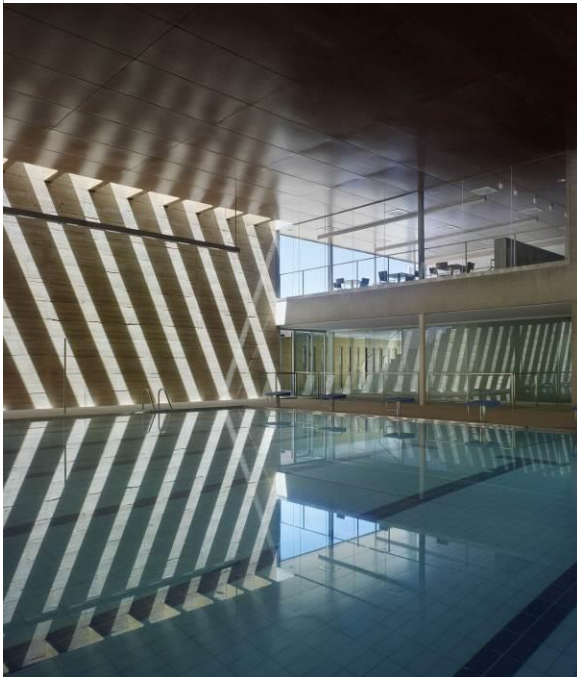
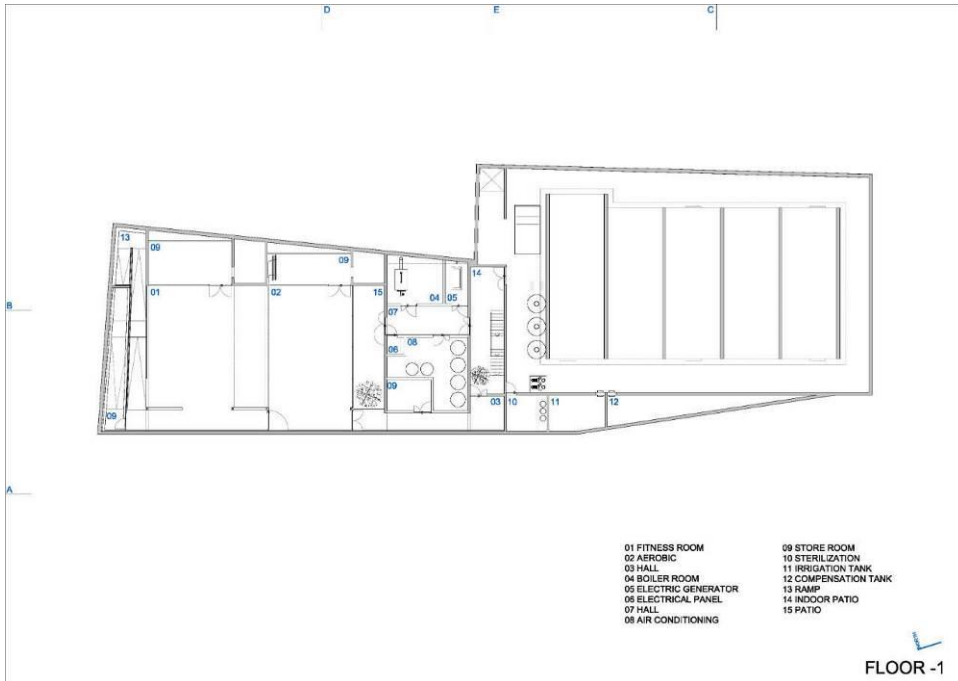
Zumthor Thermal Vals, Switzerland

notes: Plays with different light filtering experiences. Particularly good at playing up shafts of light shooting through the edges. Provides a variety of indoor and outdoor bathing experiences. Organizationally somewhat complex.



Toro Vier Architectos Indoor pool

notes: Sets the main pool low and creates a really unique light filtering experience. Has a social space overlooking the pool, which also allows more light in from the outside. Circulation is pretty legible, and trees invade interior spaces.



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