

Design and Health 10th World Congress Toronto
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THE PLACES BETWEEN

*Design and Health in Non-Programmed Spaces
in Buildings and Cities*



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INTRODUCTION

'The places between' are the non-programmed or gross-up areas in buildings and the streets, squares and other public spaces in the city. This presentation highlights the significance of 'the places between' to the health, wealth and sustainability of our environment.

The presentation is organized around three sets of word couplets:

- 1 Rules/Guidelines**
Prescription/Performance
Linear/Iterative
- 2 Monoculture/Diversity**
Isolation/Reciprocity, Connectivity
- 3 Density/Built Form**
Space, Time/Place, Occasion



Louis Kahn

These word couplets suggest methods and outcomes that are the least desirable or more abstract on the left, and most desirable or more human and evocative on the right.

In 1971 in Detroit, the great American architect Louis Kahn was presented with the American Institute of Architecture Gold Medal for lifetime achievement. His acceptance speech was entitled "The Room, the Street and Human Agreement." In the speech, Kahn urges his audience not to "accept the commercial divisions of their profession into urban design, city planning and architecture as though they were three different professions."¹ In fact, he addressed human agreement – what we have in common, as opposed to what separates us, in the context of 'the places between' in both buildings and within the city.

He describes, for example, the characteristics of a stair which would serve everyone, young and old. The stair would have a landing with a seat at a window looking out over the surrounding neighbourhood, perhaps with a small bookcase. An older person climbing the stair could stop here, admire the view or look at a book without having to admit that he or she needed a rest. This particular example, in microcosm, reflects an attempt to give people dignity in a way that doesn't draw attention to their physical frailties – that indeed provides a delightful pause for everyone climbing the stair. This whole story, so significant

¹ Twombly, Robert, and Louis Kahn. *Essential Texts*. New York: W.W. Norton & Company, 2003. Print.



Dominance of the car

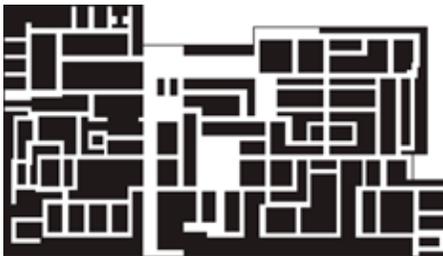
to the human quality of the place, happens in the in non-programmed space or gross-up, the area often begrudgingly assigned as a percentage of net program area.

Kahn also describes the street as, "a room of agreement. The street is dedicated by each house owner to the city in exchange for common services."² He goes on to lament, however, that the street has often lost its room-like character to the dominance of the car, and that we need to reinstate the streets – these 'places between' – to ones where "people live, learn, shop and work."³



Oglethorpe plan of Savannah - urban framework

There is, however, a profound difference between cities and buildings in the origin of their respective treatment of 'the places between.' In cities, public spaces – streets and squares – are the framework around which everything else is built. The public spaces typically exist before the buildings fabric fills in. In building programs, it is just the opposite with circulation – a significant portion of the public space – being simply assigned along with duct shafts and wall thicknesses to gross-up. This puts great pressure on the architect to correct the inappropriate sense of priorities and to redefine the significance of 'the places between' in the built form.



Large hospital floor plate

Extremely large daylight-starved hospital floor plates reflect the implacable demands of clinical adjacency where, "the efficient accommodation of processes rather than the making of places has dominated the design."⁴ Roger Ulrich's research substantiates that patients' recovery time is shortened and health is restored more quickly when they have a view outside, especially to a garden or natural setting. What about the staff, whose jobs demand full-time attendance, as opposed to the typically short stay of the patients? Diana Anderson, a qualified architect and hospital doctor, has lamented, "a large part of my hesitation in pursuing advanced clinical training was because of what I considered an intolerable hospital setting. Staff facilities are frequently without windows ... and I have found myself desperately anticipating the first ray of sunlight after a long shift."⁵ This discrepancy regarding what is good for patients and what is good for staff is akin in its misguided logic to the seatbelt law in New Hampshire, the "Live Free or Die" state, where the use of seat belts is only mandatory for those citizens 18 years and under, as if by that age they have become immune to accidents.



New Hampshire Seat Belt Law

² Twombly, Robert, and Louis Kahn. *Essential Texts*. New York: W.W. Norton & Company, 2003. Print.

³ Twombly, Robert, and Louis Kahn. *Essential Texts*. New York: W.W. Norton & Company, 2003. Print.

⁴ Prasad, Sunand. *Changing Hospital Architecture*. London: RIBA Publishing, 2008. Print.

⁵ BMJ Careers, September 14, 2013.



Large suburban house



Museum of Modern Art - good urban design



Place des Vosques - an outdoor room



Foundling Hospital, Florence - an outdoor room

The relative decline in the character of the street or public space in general was encouraged by suburban sprawl, which in turn was sustained by the substantive growth of the private program of the single-family house, which in the United States (US) has gone from an average of 1,200 ft² in 1980 to 2,135 ft² in 2010. This “McMansion” tendency leads to the dispersed city, which Charles Montgomery in his book *Happy City* labels, “the most expensive, resource intense, land grabbing, polluting way of living ever built.”⁶ The dispersed city of Atlanta for example, between 1982 and 1997, added 571,000 acres to its urban area for 1.3 million people – about one acre for every two residents. Among the many costs of this dispersal to health and wealth are significantly higher automobile fatality rates (12.72 per 100,000 in dispersed Atlanta versus 2.30 per 100,000 in compact New York City).⁷ In terms of economic health, the foreclosures of 2008 were also much more likely to happen the further one was from the centre of the city, where in the US, transportation costs for a family of four often exceeded the total spent on taxes and health care.

Jonathan Barnett, one of the pioneers of urban design, has identified three essential responsibilities for this field. They are:

- a) Environmental stewardship
- b) Enhancement of the public realm
- c) Facilitation of sociability

These responsibilities could equally be applied to building design or the urban design of buildings. Fumihiko Maki describes the new Museum of Modern Art building – respect for context, interior viewing out, fragmentary glimpses of the Manhattan cityscape, and movement of fellow visitors – as one of the best works of urban design of its period.⁸ Not so easy with a large hospital building, of course. This notion of urban design for buildings, as well as cities, is touched upon in Gordon Cullen’s book *Townscape*, where he talks about indoor landscape and outdoor room, humanizing both by seeing each in a fresh way and borrowing characteristics from one another. The embrace of Barnett’s three responsibilities is key to aspects of physical, mental, and civic health, both within the buildings and in the broader urban context.

6 Montgomery, Charles. *Happy City, Transforming Our Lives Through Urban Design*. New York: Farrar, Straus & Giroux, 2013. Print.

7 Frumkin, Howard, Frank Lawrence, and Dr. Richard Joseph Jackson. *Urban Sprawl and Public Health, Designing, Planning and Building for Healthy Communities*. Washington: Island Press, 2004. Print.

8 Maki, Fumihiko, Alex Krieger, and William S. Saunders. “Fragmentation and Friction as Urban Threats: The Post-1956 City.” *Urban Design*: 88-100. Print.



Breathing light and air, Akershus University Hospital, Norway



Legislated sprawl



Residual public open space



Positive public open space

1 Rules/Guidelines Prescription/Performance Linear/Iterative

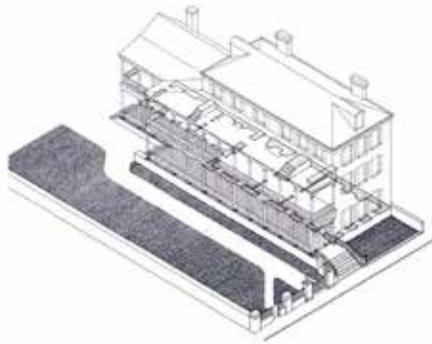
Lean Design and Lean Design consultants are becoming part of the health care design landscape. Lean design for health care is an organizational framework to maximize value and minimize waste in the design and operation of health care facilities – a commendable objective indeed. Lean Design, however, is only as good and useful as its on-the-job consultants. Indeed, Lean Design at its worst can have the same corrosive effects on buildings as misguided traffic engineering has on cities. Lean Design consultants sometimes impose maximum distances between particular functions without understanding the sometimes dire implications those sets of distances impose. In some cases, satisfying the distance requirements creates unnecessarily large and awkward floor plates with little or no natural light or views to the outside. A more holistic approach with guidelines and a more iterative process will lead to solutions which are more balanced – efficient, but with an environment that is supportive not only of patients, but also for staff and visitors who, after all, are an important part of the healing process for the patients. It will be an environment where 'the places between' are not seen as a necessary evil, but rather the life blood of the place.

With regard to rules and prescriptions for urban environments, Dr. Richard Jackson and colleagues wrote in the book *Urban Sprawl and Public Health*, "The modern America of obesity, inactivity, depression and loss of community has not just 'happened to us.' We regulated, subsidized and planned it this way. Through zoning we separated different land uses – a sensible idea when tanneries and foundries were close to homes, but an idea that has left us nearly a century later unable to walk from homes to offices and shops."¹

An example of a rule gone wrong is evident in the often residual and degraded public open spaces, particularly in the suburban context. Current requirements for public open space, although inspired by rich and varied precedents, are often reduced to quantitative statistics without any guidelines to the configuration or quality of the space (e.g. percentage of site area).

These rules also often mitigate against the appropriate disposition of private open space within the urban fabric through set-back requirements. A wonderful example of urban co-operation, by now regulated out of existence, is the Charleston 'Single House' with its multi-storey porches and garden. The architect Charles Moore has described

¹ Frumkin, Howard, Frank Lawrence, and Dr. Richard Joseph Jackson. *Urban Sprawl and Public Health, Designing, Planning and Building for Healthy Communities*. Washington: Island Press, 2004. Print.



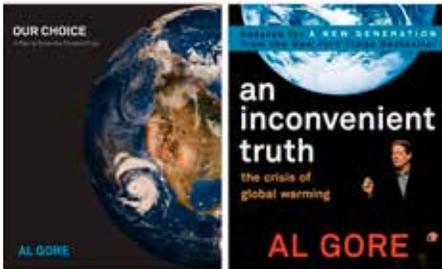
Charleston 'Single House'

the 'Single House' as follows: "the system places long one-room wide houses at right angles to the offset, with a two- or three-storey porch, off which all the rooms open, and which runs along the narrow garden. The windows of the house next door pick up air from this same garden, but no valuable space is wasted on set-back; all the lot is rendered habitable, all the rooms have natural through ventilation and adjacent space on a shaded porch and every house has a garden. Entrance is generally right off the street, often highly elaborate to celebrate the passage from the public sidewalk outdoors to the private realm (still outdoors) which begins just inside the door."² In other words, glorious Lean Design – for both buildings and their urban context.



Charleston 'Single House'

There is a congruence between urbanism, environmentalism and issues of public health that demand a more holistic, collaborative and thoughtful approach to buildings themselves and to building in the city – one that views 'making the city' a significant component of making a building in the city. As Peter Calthorpe states in his book *Urbanism in the Age of Climate Change*, "Urbanism is a climate change antibiotic – urbanism is, in fact, our single most potent weapon against climate change, rising energy costs and environmental degradation."³ Strange indeed that Al Gore, in all his writings about the environment with his focus on technological fixes, never mentions intelligent urbanism as a powerful tool in the battle against climate change. With all the marvels of technology, it is sometimes surprising how simple low-tech affordable initiatives can trump technology in the field of public health.



Al Gore books

The pre-amalgamation City of Toronto introduced a program called "Healthiest Babies Possible," which focused on pregnant women, including teenagers, single mothers and certain immigrant groups, who were at higher risk of having babies with low birth weights (at a rate of 15% to 20% of their population as compared with the Toronto average of 5%). The program consisted of prenatal counseling supplemented with milk and oranges. As a result of the participation in the program, the percentage of low birth weights dropped to approximately the City average. When the amalgamation of the City took place, there was a move by the provincial government to cancel the program. The threat of cancellation was only withdrawn when the cold reality of comparative costs was tabled.



Healthiest babies possible in Toronto

The analysis revealed that the average cost per day for a Level III neonatal intensive care bed for low weight babies was \$1,700. Evidence gathered had also indicated that each child born with a low birth weight costs hundreds of thousands of dollars more in medical expenses and hospital care over a lifetime, than a baby with a normal weight. In

² Moore, Charles W. *Perspecta 15: Backgrounds for an American Architecture*, Yale Papers on Architecture. New Haven: Eastern Press of New Haven, 1975. Print.

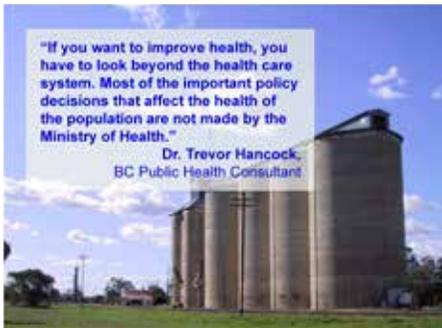
³ Calthorpe, Peter. *Urbanism in the Age of Climate Change*. Washington: Island Press, 2011. Print.



Healthiest babies in Toronto

comparison, the cost of the "Healthiest Babies Possible" program was \$112 per expectant mother.

This is but a small example of where a nominal expenditure on preventative public health measures can defray future large expenditures on health care. Issues of urban form and intelligent urbanism are such issues which, if appropriately addressed, can reduce the vast amounts of money being spent on health care.



Looking beyond silos



Chicago heat wave, two areas, two different outcomes



Low density car oriented neighborhood



Diabetes Atlas of Toronto

2 Monoculture/Diversity Isolation/Reciprocity, Connectivity

In her book *Dark Age Ahead*, Jane Jacobs gives an account of the 1995 heat wave in Chicago that resulted in many more deaths than was typical for the time of year. A team of 80 researchers from the Center for Disease Control (CDC) was brought in to see what could be done to prevent a future such occurrence. Many of the individuals who died were locked in their own apartments with no water (some buildings were without water during part of the heat wave) and no air conditioning. The researchers' obvious, but unhelpful, conclusions were that these residents died because they didn't seek out other places with water and air conditioning as instructed by the authorities – essentially blaming the residents for their own fate.

It took a young sociology student to discover that in the two areas predominantly affected by the heat wave, there were 10 times as many deaths in one area than the other. The area with the fewer number was a vibrant community with plenty of shops and an active street life, whereas the area with the greater number of deaths lacked shops, had many empty buildings and, in short, felt dangerous – the reason so many residents stayed in their apartments.

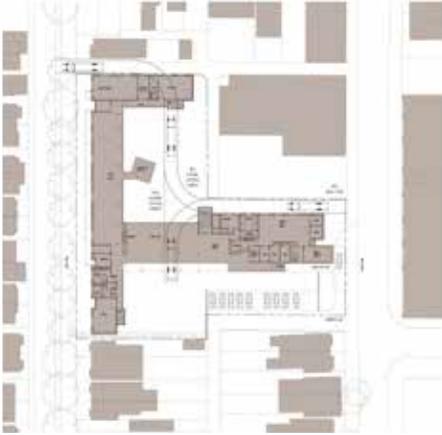
The CDC researchers with a singular lack of imagination were operating in a bureaucratic monoculture – a silo which didn't allow a more holistic view. They focused on the immediate scenes of the tragedy – the apartments themselves – without any consideration of 'the places between.'

Currently, 46% of Ontario's provincial budget is allocated to the cost of health care. According to a study by the TD Bank, if current trends persist, that figure will grow to 80% by 2030. This is clearly unsustainable.

A growing body of research supports the notion that where people live has a significant impact on their health. Until recently, little attention has been paid to environmental factors such as accessibility to healthy foods and opportunities for physical activity; factors that are of fundamental importance in controlling the growing epidemic of obesity and its attendant consequences. In the US, between 1977 and 1995, the average distance people walked per day fell 42%, while automobile use increased at three times the population growth. At the same time, the level of obesity doubled. In fact, the evidence in these related statistics was so clear that the CDC (in a more enlightened moment) issued recommendations that called for improved access to transit and mixed-use development by investing in pedestrian and bicycle infrastructure as strategies to help counter obesity and related consequences, such as diabetes.



Fire vehicles to suit the context



Turning radii City of Toronto garbage vehicles



Collector road



Long term care corridor circa 1975

It was in the spirit of these recommendations that a public transit initiative called Transit City was proposed in the City of Toronto. The context and rationale were clear. The 2007 “Diabetes Atlas of Toronto” by researchers at St. Michael’s Hospital clearly identified neighbourhoods with a strong prevalence of diabetes. In 2004, the United Way’s Study “Poverty by Postal Code,” identified priority neighbourhoods in need of social infrastructure, which they are currently providing with a series of community hubs. These neighbourhoods are relatively low-density with poor access to public transit and retail services. These are precisely the neighbourhoods that were going to be served by the Transit City Project, an initiative that did not initially receive funding because funds were needed for – what else – health care. The current Mayor, mercifully now on leave, sees ‘the places between’ only as conduits for cars, and views transit, bicycles, and pedestrian infrastructure improvements as a war on those cars – while at the same time, nobody seems to understand Transit City in terms of a public health initiative to bring support to ‘the places between.’

As well as policy monoculture, we have more direct physical monocultures, such as those governing service vehicles – fire trucks in particular. Professor Ted Kesik of the Daniels Faculty of Architecture, Landscape and Design has said, “Designing buildings and streets around fire trucks is like genetically engineering food to exactly fit cooking utensils.”¹ A study in Longmont, Colorado compared fire and traffic injuries in residential neighbourhoods served by both narrow and wide roads. Over eight years, the study found no increased fire injury risks on the narrow streets, the fires resulting in property damage only. Meanwhile, in the same eight years, there were 227 automobile accidents resulting in injuries, 10 of them fatal. These accidents correlated most closely to street width, with new 36-foot-wide streets being about four times as dangerous as traditional 24-foot-wide streets.² It is a cruel irony that wide street suburbs (wide for the fire trucks) consume so much land, and that the fire stations are more remote and disbursed than in a denser urban environment.

No clearer evidence of the problem of monoculture and isolation to the ‘places between’ is reflected in the character of streets – the urban connections, and corridors – the building connections. The monocultural street is the collector road – simply made for one use. The monocultural corridor is, in its functional ethos, considered as simply a means of getting somewhere, as opposed to being somewhere. In our early work in long term care, we would come across resident room corridors where, when leaving one’s bedroom, a resident could look one way and see a solid fire exit door, and look the other way and see an obtrusive nurse’s station with its wall of nurse call panels, serving as a visual reminder

1 Kesik, Ted. Lecture.

2 Swift, Peter, Dan Painter, and Matthew Goldstein. Residential Street Typology and Injury Accident Frequency. Longmont: Swift & Associates, 1998. Print.



Active street

of the resident's medical needs in case they might have forgotten why they were there. In addition to all this, ceilings were generally acoustic tile and all the same height; the social spaces were acknowledged by a marked increase in the number of fluorescent ceiling fixtures. The lack of hierarchy and sameness to this environment made way-finding not only difficult for the sometimes confused residents, but also for the visitors.

The street is made richer by its multi-valence of use and of means of transportation – by car, by transit, by bicycle and most importantly, by walking. Not to be forgotten here is the role of street trees, providing a sense of enclosure to the street space, reducing the heat island effect, absorbing the storm water and airborne pollution, while increasing real estate values. Lancet, the prestigious British medical journal, has recently argued that in large cities, interventions to make walking and cycling safe are far more effective in bringing down carbon emissions than technological fixes.



Daylit corridor, Christopher Wren 1692

Corridors have the potential to have the characteristics of a gallery, sometimes with views to the outside or inside to a larger space, with dimensional variety in plan and section, transcending the expectation, or rather lack of expectation, set out in the quantitative notion of gross-up. Such streets and corridors evoke diversity, reciprocity and connectivity.

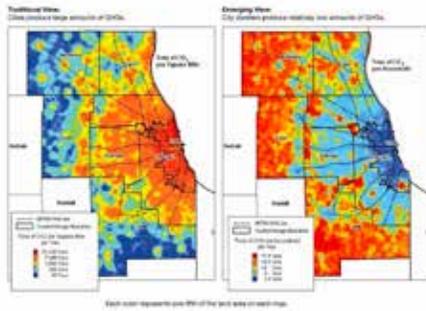


Corridor as gallery for pool



Bedroom corridor with views to exterior court

3 Density/Built Form Space, Time/Place, Occasion



Carbon emissions Chicago, Left - total emissions, Right - emissions per capita



Rocky Mountain Institute - poor environmental performer

We live in an urban age. In 1910, 10% of the world's population lived in cities. By 2007, this had increased to 50%, and it is projected to reach 75% by the year 2050. In terms of urban models, the compact city, dense and socially diverse, brings advantages of proximity, energy efficiency and improved public health – in short, a measure of social and economical sustainability necessary to ensure our future. Density is the typical measure of the compactness of urban form and a useful metric to evaluate the viability of public transit and a key to lowering carbon emissions. The impact of density on carbon emissions is evident in two infrared aerial views of Chicago, one showing total carbon emissions and one showing carbon emissions on a per capita basis. The second of these images reveals the downtown area with its walking, biking and mass transit to be far outperforming the outlying car dependent areas. Such environmental icons as the Rocky Mountain Institute and Prince Charles' village of Poundbury are both, in spite of their green innovations, poor performers environmentally because of their heavy car dependency. They share responsibility for perpetuating the powerful anti-city bias of the environmental movement. Adding to that finding, in the U.S., 3% of the nation's landmass (essentially its cities) generates 85% of its gross domestic product.¹

However, like time and space, density is a relatively abstract term without any qualitative implication. Density is the mean average rainfall of urban metrics. Two cities that experience the same mean average rainfall can have remarkably different experiences if, in one city, the rain is spread equally across 365 days of the year, whereas, in the other city, it occurs all in one week. So it is with density.



Same average mean rainfall - different experiences

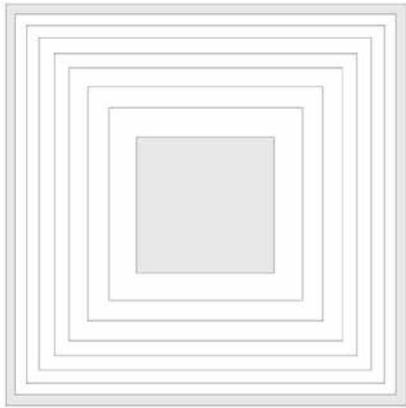
What is really going to determine the quality of the urban fabric in the compact city is the nature of the built form, as well as the diversity and mixture of uses. The success of the city fabric is governed by how each act of building goes beyond the internal program requirements of the particular structure to enhance the public realm of the city. 'The places between' – the streets, squares, laneways, porches, colonnades and canopies – are the life blood of the city.



Pedestrian passage in high density project

The architectural implications of built form led Sir Leslie Martin, a British architect and Head of the Department of Architecture at the University of Cambridge, to create the Centre for Land Use and Built Form Studies (now The Martin Centre) in 1967. Martin and his colleagues wanted to show how particular built forms could mitigate the impact of higher densities. To that end, they were concerned about the potential of built

¹ Chakrabarti, Vishaan. A Country of Cities: A Manifesto for an Urban America. New York: Metropolis Books, 2013. Print.



Fresnel square



Cambridge UK



Nolli Map of Rome



Figure-ground plans of two long term care homes

form to create a sense of place and to optimize the quality of exterior space created by the building footprint.

A seminal diagram for their research was the Fresnel Square where the outer segment (in fact, each segment) contains the same area as the middle square. If one was to imagine the full square as a city block, and the two extremes as buildings, one could suggest some qualitative differences between the two. The perimeter building would be street-related with a shallow floor plate optimizing access to light and air. The outdoor space in the centre has the potential to be a garden court or outdoor room for the block. The urban fabrics of central Paris or Barcelona are classic examples of perimeter blocks, a celebration of streets and courts – ‘the places between.’ The central building, on the other hand, is object-like, not related to the streets, with a deep floor plate and with residual, undefined outdoor space surrounding it. Suburban tracts of single-family houses or slab block developments are typical of this isolating approach. Martin and his colleagues developed a mantra, “think-line, not think-blob;” the “think-line” proposition advocating skinny buildings that define the space between and allow plenty of natural light, as well as the possibility of through ventilation. It is not surprising that this research began at Cambridge, a university city characterized by skinny buildings creating streets and courts.

The nature of the figure ground plan (a descendant from the Nolli Plan of Rome) encourages the consideration of place as opposed to object as the essence of the plan. The technique of the figure ground plan can be used in the ‘urban design’ of buildings to examine the hierarchy and continuity of public spaces and their connection with the outdoors. The appropriate hierarchy and disposition of public space within the plan is at the root of a building’s engagement with exterior places, and is significant in creating a context for orientation. Strategies such as the use of single-loaded corridors (more like the galleries or promenade decks), locating elevators to where there is a view to the outdoors, and creating communal rooms with a double aspect allow the public areas of the building – ‘the places between’ – to breathe light and air.

Referring back to the beginning of the lecture and Louis Kahn’s plea for integration of planning, urban design and architecture, perhaps we should add landscape architecture to that mix. The emergence and integration of landscape and its ecological principals in a more meaningful way has brought richness to ‘the places between.’ James Corner and Diller Scofidio Renfro’s Highline in New York, and Daoust Lestage’s Le Quartier des Spectacles in Montreal are exemplary projects showing the transformational power of enlightened integration of landscape architecture and urban design on the wealth and civic health of the city.



High Line, New York City



Le Quartier des Spectacles, Montreal PQ -
Daoust Lestage Architects



Fort Garry, Campus University of Manitoba
competition winner

However, not all projects that come under the moniker Landscape Urbanism (one of the many “isms”) are created equal. The bottom photograph shows an early image from the winner of an international design competition for a new Fort Garry Campus at the University of Manitoba, where the average January temperature is –18.3 degrees Celsius (Toronto’s –1 degree Celsius). This project in its current state looks a lot like towers in a park, the very misguided modernist concept that we have been trying to mitigate for the last 50 years. What happens outside among the lush landscaping, particularly in January, when the landscaping is not so lush? There is great interdependence between all the forces to create rich and varied and sustainable ‘places between.’ Let’s hope as the project evolves, this interdependence will be recognized and acted upon. As David Owen aptly states in his book Green Metropolis, “The crucial fact about sustainability is that it is not a micro phenomenon: there can be no such thing as a ‘sustainable’ house, office building, or household appliance, for the same reason that there can be no such thing as a one-person democracy or a single company economy...sustainability is a context, not a gadget or a technology.”²

The quality and character of ‘the places between’ reflect the significance attributed to that context and its design in the creation of a healthy and sustainable environment.

² Owen, David. Green Metropolis – Why Living Smaller, Living Closer and Driving Less Are the Keys to Sustainability. New York: Riverhead Books, 2009. Print.

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Louis Kahn- Collection of Harriet Pattison and Nathaniel Kahn

Breathing light and air, Akershus University Hospital, Norway- C.F. Moller Architects

Charleston 'Single House' drawing- Moore, Charles W. Perspecta 15: Backgrounds for an American Architecture, Yale Papers on Architecture. New Haven: Eastern Press of New Haven, 1975. Print.

Diabetes Atlas of Toronto - Institute for Clinical Evaluative Studies St. Michael's Hospital

Daylit corridor, Christopher Wren 1692 - Peter Aprahamian

Carbon emissions Chicago, Left - total emissions, Right - emissions per capita - www.travelmatters.org