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Architecture Of Continuity : Establishing Architectural Continuity For The Purpose Of Achieving Autonomy For The Elderly

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ARCHITECTURE OF CONTINUITY:
Establishing Architectural Continuity for the Purpose of Achieving
Autonomy for the Elderly

By

(Mohammed al-Atheri, B.Arch. Sci., Ryerson University, 2004)

A design thesis

presented to Ryerson University

in partial fulfillment of the
requirements for the degree of
(Master of Architecture)
in the Program of
(Master of Architecture)

Toronto, Ontario, Canada, 2012

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Architecture of Continuity:
Establishing Architectural Continuity for the Purpose of Achieving Autonomy for
the Elderly

Master of Architecture 2012

Mohammed al-Atheri

Master of Architecture

Ryerson University

ABSTRACT

The journey of aging is often accompanied by a loss of autonomy as a result of the decline of the physiological capacity of the human body, as well as the inefficient integration of architecture, urbanism and Universal Design for the purpose of providing a built environment with the capacity to respond to the shift in human needs. Autonomy, I believe, can be achieved for the elderly when architecture synthesizes the elements of perception on the visual and the sensorial levels with the elements of action on the physiological level in the same experience.

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I would like to thank my supervisor Prof. Marco Polo for his dedicated effort and guidance. Your valuable input and critique helped in improving my design and research skills and inspired a critical way of thinking. I will cherish this experience for years to come.

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TABLE OF CONTENTS

| | |
|---|-----|
| AUTHOR'S DECLARATION | iii |
| ABSTRACT | v |
| ACKNOWLEDGEMENTS | vii |
| TABLE OF CONTENTS | ix |
| LIST OF FIGURES | xi |
| RESEARCH METHODOLOGY | 1 |
| INTRODUCTION | 1 |
| CHAPTER 1 - DEMOGRAPHIC ANALYSIS | 3 |
| SECTION - I - INTRODUCTION | 3 |
| SECTION - II - INDUSTRIES' GROWTH PROJECTIONS | 8 |
| Part 1. Housing Starts | 9 |
| Part 2. Non-Residential Starts | 10 |
| Part 3. Health Care Industry | 11 |
| Part 4. Sports and Recreation | 12 |
| SECTION - III - CONCLUSION | 13 |
| CHAPTER 2 - THE SOCIAL AGENDA - CHALLENGES AND OPPORTUNITIES | 15 |
| SECTION - I - INTRODUCTION | 15 |
| SECTION - II - EMERGING MODELS | 17 |
| SECTION - III - 'UNIVERSAL DESIGN' | 30 |
| Part 1. Definition | 31 |
| Part 2. Critique | 33 |
| Part 3. Inclusive Design | 35 |
| Part 4. Urban Scale | 37 |
| SECTION - IV - 'GLOBAL AGE-FRIENDLY CITIES: a guide by World Health Organization | 42 |
| SECTION - V - CONCLUSION | 47 |
| CHAPTER 3 - THE ARCHITECTURAL AGENDA - IN PURSUIT OF CONTINUITY | 49 |

| | |
|--|-----|
| SECTION - I - INTRODUCTION | 49 |
| SECTION - II - DESIGN METHODOLOGIES | 52 |
| Part 1. 'Superimposition' | 52 |
| Part 2. 'Smoothness' | 58 |
| Part 3. 'Fusion' | 65 |
| SECTION - III - CONCLUSION | 71 |
| CHAPTER 4 - DESIGN PROPOSAL | 73 |
| SECTION - I - PROBLEM ANALYSIS / CONCERN | 73 |
| SECTION - II - THE CONDITION | 74 |
| Part 1. Site Selection | 74 |
| Part 2. Site Conditions / analysis / opportunities | 81 |
| Part 3. Program | 89 |
| SECTION - III - POSITION / DESIGN STRATEGY | 91 |
| Part 1. Tectonic Continuity | 92 |
| Part 2. Contextual Continuity | 104 |
| Part 3. Programmatic Continuity | 114 |
| SECTION - IV - PROJECT LAYOUT | 118 |
| Part 1. Retail | 118 |
| Part 2. The Subsurface | 123 |
| Part 3. Articulation of the Surface | 130 |
| Part 4. Hotel | 135 |
| Part 5. Cultural and wellness components | 140 |
| SECTION - V - CONCLUSTION | 150 |
| REFERENCES LIST | 154 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1.1: World Map by land area | 4 |
| Figure 1.2: World Map by worldwide distribution of people over 65 years old | 4 |
| Figure 1.3: Canada's population pyramid | 5 |
| Figure 1.4: Statistics Canada, 2006 | 7 |
| Figure 1.5: Statistics Canada, 2006 | 7 |
| Figure 1.6: Ontario Economic Indicators | 8 |
| Figure 1.7: Ontario Economic Indicators | 9 |
| Figure 1.8: Ontario Household Spending | 9 |
| Figure 1.9: Housing Starts vs. Housing Renovation forecast | 10 |
| Figure 1.10: Commercial and Institutional Starts forecast | 11 |
| Figure 1.11: Ontario Health Spending over the next 20 years | 12 |
| Figure 2.1: Statistics Canada and Ontario Ministry of Finance Projections | 16 |
| Figure 2.2: De Plussenburgh, Amsterdam, 2006 | 18 |
| Figure 2.3: Nursing home (renovation and extension) in Hainburg, Austria, 2009 | 20 |
| Figure 2.4: Santa Rita Socio Geriatric Centre, Spain, 2009 | 21 |
| Figure 2.5: Santa Rita Socio Geriatric Centre, Spain, 2009 | 22 |
| Figure 2.6: Nursing home project, Alcácer do Sal, Portugal, 2010 | 23 |
| Figure 2.7: Bioscleave House, East Hampton, NY , 2008 | 24 |
| Figure 2.8: Reversible Destiny lofts, Mitara, Tokyo, Japan, 2005 | 24 |
| Figure 2.9: Ivory Coast Retirement Community, Lagoon Aby, Ivory Coast, ongoing | 26 |
| Figure 2.10: Ivory Coast Retirement Community, Lagoon Aby, Ivory Coast, ongoing | 26 |
| Figure 2.11: Geropolis, Germany, Research Model | 28 |
| Figure 2.12: Geropolis, Germany, Research Model | 29 |
| Figure 2.13: Geropolis, Germany, Research Model | 30 |
| Figure 2.14: Population with a Disability/ Source: Statistics Canada | 32 |
| Figure 2.15: Shopsense model, 2002 | 36 |
| Figure 2.16: Shopsense model, 2002 | 37 |
| Figure 2.17: St. Louis Park development, Minneapolis, 2003 | 39 |
| Figure 2.18: City of Lincoln, Downtown Master Plan, Nebraska, 2005 | 40 |
| Figure 2.19: CityPlace in West Palm Beach, Florida, 2002 | 42 |
| Figure 2.20: Statistics Canada, 2006 | 43 |
| Figure 2.21: Maintaining functional capacity of the life course, WHO, 2007 | 44 |
| Figure 3.1: Zaha Hadid, Victoria City Aerial, Berlin, Germany, 1988 | 50 |

| | |
|--|----|
| Figure 3.2: OMA Parc de la Villette, France, Paris, 1982 | 53 |
| Figure 3.3: Peter Eisenman, The Wexner Centre for Visual Art, City of Columbus, Ohio, 1983 | 54 |
| Figure 3.4: François Morellet, Superposition-de-2-Trames-de-Carres | 55 |
| Figure 3.5: Peter Eisenman, The Greater Columbus Convention Centre, Columbus, Ohio, 1990 | 56 |
| Figure 3.6: Greg Lynn, Kleiburg housing project, Bijlmermeer, Netherlands, 2006 | 59 |
| Figure 3.7: Greg Lynn, Kleiburg housing project, Bijlmermeer, Netherlands, 2006 | 60 |
| Figure 3.8: Zaha Hadid, Szervita Square project, Budapest, 2006 | 61 |
| Figure 3.9: Zaha Hadid, Szervita Square project, Budapest, 2006 | 61 |
| Figure 3.10: D'Arcy Thompson's deformation art work | 62 |
| Figure 3.11: UNStudio, Burnham pavilion, Millennium Square, Chicago, 2009 | 64 |
| Figure 3.12: FOA, The Yokohama Port Terminal, Yokohama, Japan, 2002 | 67 |
| Figure 3.13: FOA, The Yokohama Port Terminal, Yokohama, Japan, 2002 | 67 |
| Figure 3.14: Sanaa, The 21st Century Museum of Contemporary Art, Kanazawa, Japan, 2004 | 69 |
| Figure 3.15: Barry Le Va's, Bunker, 1995 | 69 |
| Figure 3.16: MVRDV, SpaceFighter The Evolutionary City (Game), 2005 | 70 |
| Figure 4.1: Maslow's pyramid of needs | 74 |
| Figure 4.2: City of Burlington population by age group, Statistics Canada, 2006 | 75 |
| Figure 4.3: GTA average population count by age group, Statistics Canada, 2006 | 75 |
| Figure 4.4: City of Burlington % of total population (65 to 69 years), Statistics Canada, 2006 | 76 |
| Figure 4.5: City of Burlington % of total population (70 to 74 years), Statistics Canada, 2006 | 76 |
| Figure 4.6: City of Burlington % of total population (75 to 79 years), Statistics Canada, 2006 | 77 |
| Figure 4.7: City of Burlington % of total population (80 to 84 years), Statistics Canada, 2006 | 77 |
| Figure 4.8: City of Burlington % of total population (85 years and over), Statistics Canada, 2006 | 78 |
| Figure 4.9: City of Burlington median income, Statistics Canada, 2006 | 78 |
| Figure 4.10: City of Burlington median income, Statistics Canada, 2006 | 79 |
| Figure 4.11: City of Burlington % of total population, Statistics Canada, 2006 | 79 |
| Figure 4.12: Proposed site | 80 |
| Figure 4.13: Proposed site | 80 |

| | |
|---|-----|
| Figure 4.14: Proposed site boundary and area | 81 |
| Figure 4.15: Key features within approximately 5 minute walking distance from the site | 82 |
| Figure 4.16: Zones and contextual activities | 83 |
| Figure 4.17: Existing contextual discontinuity | 83 |
| Figure 4.18: Selected area and its opportunity to function as a connective tissue | 84 |
| Figure 4.19: View looking south towards the site | 85 |
| Figure 4.20: Step 1: Turn obstacles into opportunities for physical and visual continuity | 86 |
| Figure 4.21: Step 1. Turn obstacles into opportunities for physical and visual continuity | 86 |
| Figure 4.22: Step 2. Link the lakeshore and the residential area | 87 |
| Figure 4.23: Step 3. Engage the lake and represent is as natural element that is part of the site | 87 |
| Figure 4.24: View looking north east showing the relationship with the waterfront | 88 |
| Figure 4.25: View looking east showing the site from downtown Burlington | 88 |
| Figure 4.26: Step 4. Strengthen the axial relationship with the downtown area on a visual and a physical level | 88 |
| Figure 4.27: Step 5. Utilize the east side of the site as a visual connector and a gateway to downtown Burlington | 89 |
| Figure 4.28: View looking west, showing opportunity for gateway | 89 |
| Figure 4.29: Fusion/ Universal Design Matrix | 92 |
| Figure 4.30: Equitable Use / Clear Circulation (links) | 93 |
| Figure 4.31: Flexibility in Use / Clear Circulation (links) | 94 |
| Figure 4.32: Equitable Use / Compact & Thick 2D | 94 |
| Figure 4.33: MVRDV, Villa VPRO, Hilversum, The Netherlands, 1997 | 94 |
| Figure 4.34: Equitable Use / Urban Continuity | 95 |
| Figure 4.35: Snohetta, Oslo Opera Theatre, Norway, 2007 | 95 |
| Figure 4.36: Equitable Use / Continuous Flow | 96 |
| Figure 4.37: Jean Nouvel, Paris Philharmonie proposal, Parc de la Vilette, France | 96 |
| Figure 4.38: Simple and Intuitive Design / Clear Circulation | 97 |
| Figure 4.39: Renzo Piano / Richard Rogers, Centre Georges Pompidou, Paris, 1977 | 97 |
| Figure 4.40: Simple and Intuitive Design / Reference Point (Nodes) | 97 |
| Figure 4.41: Simple and Intuitive Design / Reference Point (Nodes) | 98 |
| Figure 4.42: Rem Koolhaas, Très Grande Bibliothèque, Paris | 98 |
| Figure 4.43: Perceptible Information / Reference Point (Nodes) | 99 |
| Figure 4.44: Kevin Roche and John Dinkeloo, Oakland, California, Museum of Art, 1961 | 99 |
| Figure 4.45: Arthur Erickson, Robson Square, Vancouver, 1979 | 100 |
| Figure 4.46: Perceptible Information / Reference Point (Nodes) | 101 |

| | |
|---|-----|
| Figure 4.47: Enric Miralles and Benedetta Tagliabue, Santa Caterina Market, Barcelona, 2005 | 101 |
| Figure 4.48: Massimiliano e Doriana Fuksas, The New Trade Fair, Milan, 2005 | 102 |
| Figure 4.49: Tolerance for Error / Organizational Hierarchy | 103 |
| Figure 4.50: Low Physical Effort / Continuous Flow/ Perceptible information | 103 |
| Figure 4.51: Site | 106 |
| Figure 4.52: Step 1. Introduce a field or a surface of design | 107 |
| Figure 4.53: Step 2. Adjust the field to match the physical boundary of the proposed site | 107 |
| Figure 4.54: Step 3. Engage the field physically with the natural element | 108 |
| Figure 4.55: Step 4. Fold the field on the west side | 108 |
| Figure 4.56: Step 5. Fold the field to create a gateway condition for downtown Burlington | 109 |
| Figure 4.57: Step 6. Twist the vertical field into a horizontal plane on the south-east edge of the site to create a sense of transition and movement from urban to natural condition | 109 |
| Figure 4.58: Step 6. The creation of physical and visual path between the residential area and the waterfront | 110 |
| Figure 4.59: Step 7. Introduce a physical transition between the two levels of the field to create a continuous flow of movement | 110 |
| Figure 4.60: Step 8. Introduce a horizontal platform at the lake elevation level | 111 |
| Figure 4.61: Step 9. Extend the field to create an area for recreational activities associated with the natural condition | 111 |
| Figure 4.62: Step 10. Repeat the field extension into the lake to introduce a platform central to the adjacent hotels on the west side | 112 |
| Figure 4.63: Step 11. Establish internal continuity within the local surface by connecting indoor and outdoor field conditions together | 112 |
| Figure 4.64: Step 12. Re-establish the continuity of flow and movement within the design surface | 113 |
| Figure 4.65: Opportunity to utilize both sides of the 'design surface' | 114 |
| Figure 4.66: Step 1. Program Integration | 115 |
| Figure 4.67: Step 2. Increased level of integration | 116 |
| Figure 4.68: Step 3. Increase intensity of program in relation to the existing contextual conditions | 116 |
| Figure 4.69: Step 4. Expressive overlap | 117 |
| Figure 4.70: Heritage Properties | 119 |
| Figure 4.71: Retail blocks and grid superimposition | 119 |

| | |
|---|-----|
| Figure 4.72: Retail blocks and outdoor elements | 120 |
| Figure 4.73: Retail section / transition areas/ blocks configurations | 120 |
| Figure 4.74: Retail section / outdoor-indoor areas/ access to daylight / blocks configurations | 121 |
| Figure 4.75: Retail bird's eye view | 121 |
| Figure 4.76: Retail East-West section (1) | 122 |
| Figure 4.77: Retail East-West section (2) | 122 |
| Figure 4.78: subsurface entry | 124 |
| Figure 4.79: Subsurface circulation zone and program distribution | 124 |
| Figure 4.80: Central plaza bird's eye view | 125 |
| Figure 4.81: Central plaza perspective | 125 |
| Figure 4.82: Grid superimposition | 126 |
| Figure 4.83: Subsurface grid superimposition and space allocation | 126 |
| Figure 4.84: Subsurface space allocation | 127 |
| Figure 4.85: Program continuity vs. discontinuity | 127 |
| Figure 4.86: Program distribution (Retail, Cultural and Wellness) | 128 |
| Figure 4.87: Subsurface East-West section (1) | 128 |
| Figure 4.88: Subsurface East-West section (2) | 129 |
| Figure 4.89: Subsurface East-West section (3) | 129 |
| Figure 4.90: Step 1. Accommodating active and passive recreation | 131 |
| Figure 4.91: Step 2. Skylight / Providing visual continuity and access to daylight | 131 |
| Figure 4.92: Step 3. Sofscape / Accommodating different patterns of activities | 132 |
| Figure 4.93: Central courtyard wall sections / handrail configurations | 133 |
| Figure 4.94: Central courtyard conceptual integration of handrails | 133 |
| Figure 4.95: Ramp / handrail configurations | 134 |
| Figure 4.96: Top surface landscape and surface treatment | 134 |
| Figure 4.97: Hotel mass | 135 |
| Figure 4.98: Solid vs. void, continuous flow and permeability | 136 |
| Figure 4.99: Three-dimensional superimposition | 136 |
| Figure 4.100: Massing, three-dimensional superimposition | 137 |
| Figure 4.101: Hotel bird's eye view | 137 |
| Figure 4.102: Long-range view from downtown Burlington | 138 |
| Figure 4.103: Smoothness, hotel wood deck and wood screen | 139 |
| Figure 4.104: Smoothness, hotel wood deck and wood screen | 139 |
| Figure 4.105: Hotel base / Passive recreation | 140 |

| | |
|--|-----|
| Figure 4.106: Cultural and wellness components allocation | 141 |
| Figure 4.107: Cultural and wellness bird's eye view | 141 |
| Figure 4.108: Horizontal and vertical planes | 142 |
| Figure 4.109: Introduction of planes (surfaces of action and surfaces of perception) | 142 |
| Figure 4.110: Transition of planes | 142 |
| Figure 4.111: Transition of volumes | 143 |
| Figure 4.112: Cultural and wellness interior view / Transition of space and program | 144 |
| Figure 4.113: Cultural and wellness North-South section (1) | 144 |
| Figure 4.114: Cultural and wellness North-South section line | 145 |
| Figure 4.115: Cultural and wellness North-South section (2) | 145 |
| Figure 4.116: Cultural and wellness south perspective | 146 |
| Figure 4.117: Spa/wellness program south perspective | 146 |
| Figure 4.118: Retail and wellness perspective (winter) | 147 |
| Figure 4.118: Spa/wellness program south perspective (winter) | 147 |
| Figure 4.119: Early study of tectonic continuity and the application of 'smoothness' as a design method | 148 |
| Figure 4.120: East-West section at the cultural and wellness component | 149 |
| Figure 4.121: North access. View looking south-east | 149 |
| Figure 4.122: Gateway. View looking west along Lakeshore Road | 150 |

RESEARCH METHODOLOGY

The research methodology of the thesis is based on an analysis of three main areas concerning; statistical projections, emerging social mandates and an emerging architectural discourse situated in a current body of literature including *The Architecture of Continuity* by Lars Spuybroek. This will be examined in relation to the condition of an increasing aging population around the world and Canada for the purpose of grasping the challenges the elderly are facing, deriving the source which instigated these challenges and examining the processes and models currently rethinking the built environment with the elderly in mind.

The design proposal will then be based on two strategies: first, a design strategy driven by an experimental approach for the purpose of establishing connections and relationships between design standards [Universal Design] architecture and urbanism to unearth hidden possibilities and opportunities that could help create an alternative architectural model designed for the elderly; and second, a constructive strategy, combining research conclusions and lessons learned in a programmatic proposal.

INTRODUCTION

The issue of the growth of the elderly population is emerging as an essential factor driving the speculation of the shape and the condition of the future built environment. Demographer and economist David Foot argues that the issue of the increasing aging population is connected to more levels and sets of subjects than any other demographic group, and is emerging as an economic factor and a critical element for urban planning in the Western world¹. Matthias Hollwich of HWKN Architects, on the other hand, argues that the increase of the elderly population as an issue is equal in magnitude and urgency to sustainable development and climate change².

Therefore, establishing a comprehensive understanding of this emerging subject

¹ Foot, David: *[Boom, Bust & Echo 2009]*, Toronto, Stoddart Publishing Co, 2009, p.8

²Hollwich, Matthias , lecture, extracted from (http://www.picnicnetwork.org/conference_sessions/2)

requires an examination and a review of the related social, economic and contextual aspects using different tools, starting with Chapter 1 which presents a research into demographics and the associated shape of the main industries driven by the anticipated demographic shift as a tool to understand the extent of effect the aging population have over the built-environment and over the future direction of the planning process.

The second chapter provides a review of the current social issues regarding aging, which I think help reveal the associated challenges and opportunities that are predicating the shape of current design standards and future urban conditions. In addition, this chapter traces current design trends and proposals which are addressing specific needs and conditions in a manner that would help inform a sensitive programmatic proposal.

The third chapter is an examination of current architectural and theoretical discourse concerned with the issue of continuity in architecture and urbanism, as a tool for proposing an architectural typology and a design methodology able to respond to the physical challenges of the built environment.

The final part of the thesis presents a design proposal based on key requirements and mandates outlined in the first three chapters. In addition, the fourth chapter would include the design strategy and the contextual conditions driving the final proposal.

CHAPTER 1 - DEMOGRAPHIC ANALYSIS

This chapter examines demographics in Canada and specifically Ontario with a focus on analysing current statistics and projections in relation to economic projections which factor in the elderly population. Different sectors of the economy are sampled, including the construction industry both residential and non-residential, the health care industry, the gaming industry, as well as the sports and recreation industries - David Foot argues that the uniqueness of Canada's demographic structure makes the industries listed above driven primarily by the level of demand of the baby boomers and the seniors due to sharp fluctuations of birth rates³ - therefore, on a macro scale level, demographic forecasts can easily reflect the future image of the built environment from a planning point of view in order to provide a picture that can quantify future and long term demands related to the elderly as a general market base. The recognition of the elderly as a major player and in the economy in the coming years helps to anticipate the nature of future demands and map out the issues that are important in shaping the future environment in order to provide adequate support and response to the elderly as an age group.

SECTION - I - INTRODUCTION

According to the World Health Organization, the world population over 60 years of age in 2000 was equal to 600 million people, and is expected to double in the next 15 years. In 2050, the world population over 60 is expected to reach 22%, for the first time exceeding the number of the young under 15 years of age⁴. However, in Canada this percentage is already equal to 19% according to 2006 statistics and is expected to double by 2050⁵.

³ K.Foot, David: *[Boom, Bust & Echo 2009]*, Toronto, Stoddart Publishing Co, 2009

⁴ World Health Organization: *[Global Age-friendly Cities: A Guide]*, France, World Health Organization, 2007

⁵ Public Health Agency of Canada, "The Chief Public Health Officer's Report on The State of Public Health in Canada 2010", Retrieved December 02, 2011 from: (<http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2010/fr-rc/cphorsphc-respcacsp-06-eng.php>)

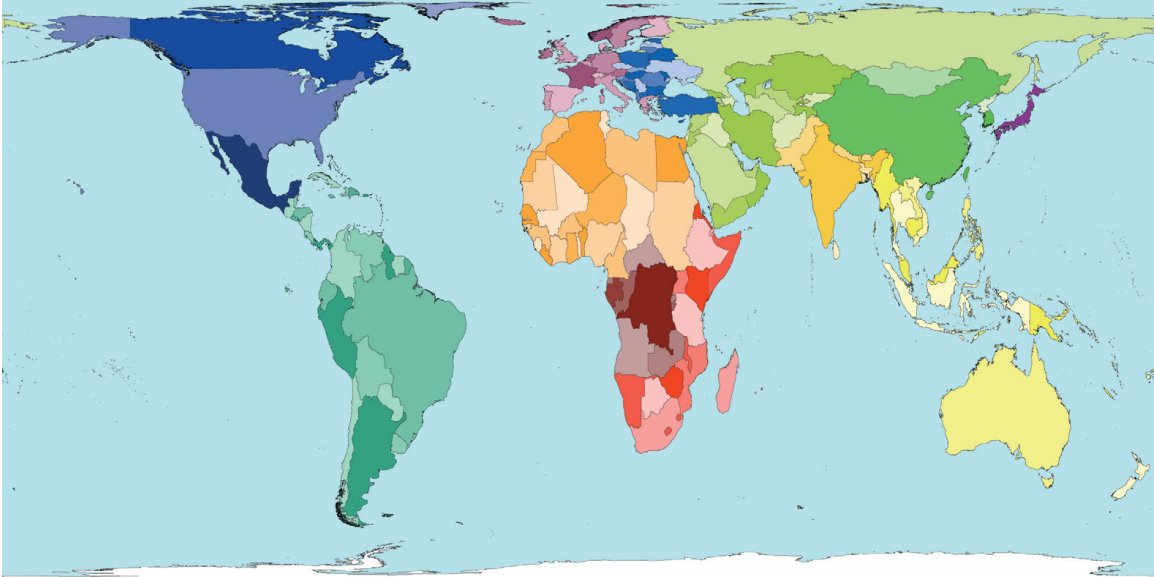


Figure 1.1: World Map by land area

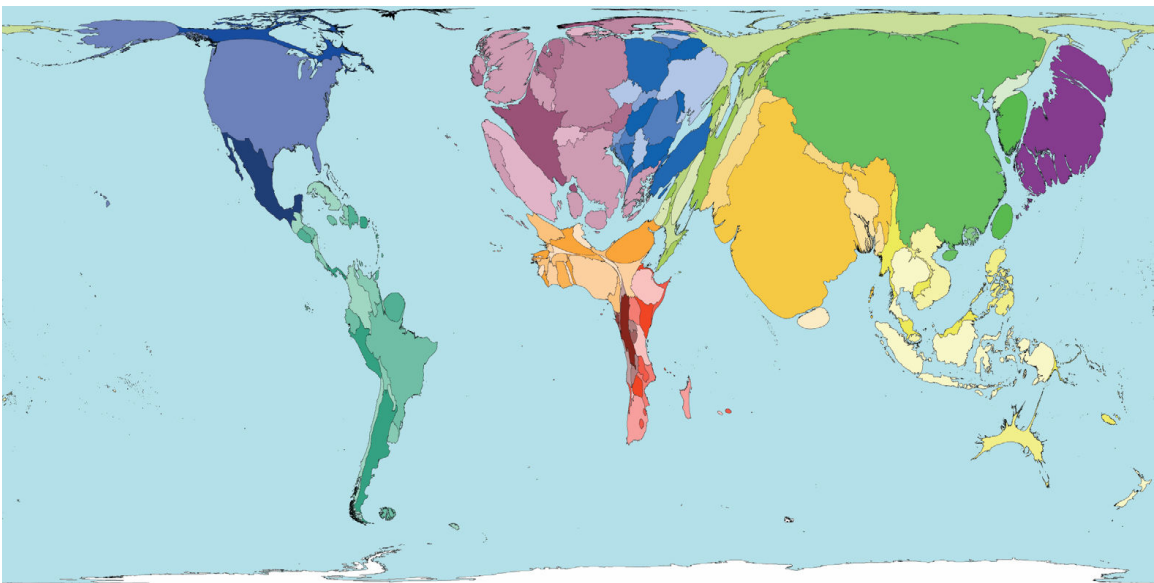


Figure 1.2: World Map by worldwide distribution of people over 65 years old

Immediately following the end of World War II in 1945, the industrial world witnessed a surge in birth rates, starting a baby boom in 1946 following the return of servicemen in mid to late 1945 coupled with high immigration rates which lasted 20 years due to the economic prosperity that accompanied the industrial capacity to commercialize products originally developed as part of the war efforts and the scientific and technical advancements achieved which created a vivid consumer market in the post war, post depression era; as a result, a demographic phenomenon was created.

Statistics show that Canada has the second fastest growing aging society after Japan. Baby boomers represent approximately 30% of Canada's population; this fact carries a number of implications for the social and the economic structure of the country. By employing demographics as a tool to analyse and decipher the impact of baby boomers, a picture of future growth can be drawn projecting basic demand rates and generating social and economic agendas.

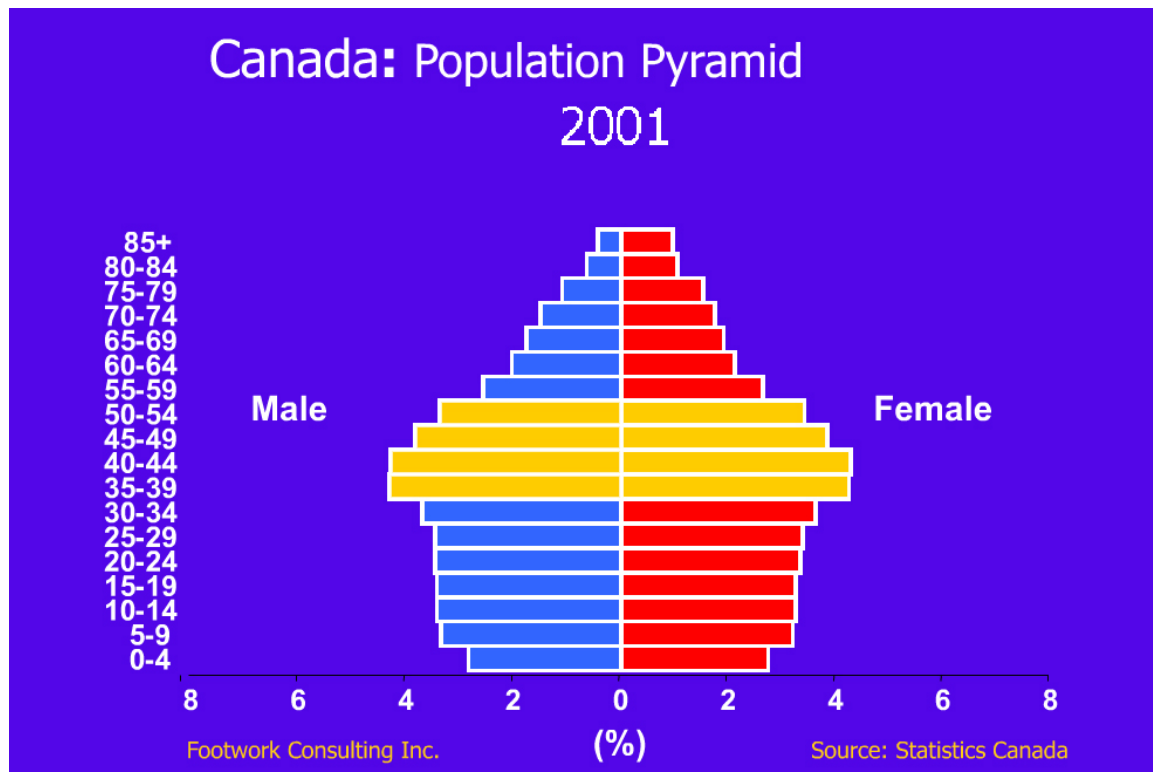


Figure 1.3: Canada's population pyramid

The impact of baby boomers can be qualified on two levels, the first level is measured on a demographic basis measured by the population size and geographic distribution, the second level is quantified on an economic basis which measures actual net worth and purchasing power.

According to the 2006 census by Statistics Canada represented in Figure 1.4, Ontario's baby boomers number approximately 3.7 million people which equals 29% of the population. The combination of the baby boomer population with seniors above 65 years old is known as the Zoomers, and this group represents 5.9 million people or 48% of the total Ontario population. In Canada, Zoomers control more than 77% of all Canadian

wealth which make this group the largest market for a number of industries. Cynthia Ross indicates that industries serving Zoomers include “travel, real estate, health and beauty, automotive, home renovation and financial services”⁶, and adds that in 2009 “Zoomers purchased 58 per cent of all cars and 80 per cent of all health care products. They also enjoyed 55 per cent of all vacations. Zoomers represent 73 per cent of households with \$100,000 income and 83 per cent of households with savings or securities over \$500,000”⁷.

This segment of the population spends less on education and active sports amenities; their biggest impact is on the health care system which will become exponentially more expensive as the population grows older.

Research conducted by the C.D. Howe Institute suggests that baby boomers will represent a \$1.5 trillion liability over the next 50 years⁸, and predicts that governments’ only way to reduce the impact of this liability will be both through an inevitable increase in taxes - or some other form of revenue generation - and the retirement age. However, in the next 20 years and with the start of the retirement of the baby boomers in 2012, an increase in capital in the financial system will emerge for many reasons. David Foot suggests that those reasons are related to boomers being great savers, specifically the front-end boomers, due to the fact that the post war economy was robust and the marketplace was in huge demand for new products and services, women started pursuing higher education and entering the workforce, also home ownership was highly accessible to young families at that time. They are currently at the peak of their earning power, paid off their houses and are turning into empty nesters. Currently, according to the 2006 Statistics Canada in Figure 1.5 below, 72% of baby boomers earn more than \$40,000 compared to 26% for people at age of 65 years⁹, which I think translate into a shift of role for the elderly as consumers only.

⁶ Cravit Cynthia Ross, “Boomers keep on spending“ , May 09, 2010”, Retrieved August 29, 2010 from: (<http://www.50plus.com/money/boomers-keep-on-spending/808/>)

⁷ Ibid.

⁸ The national net liability of health / retirement programs – measures the gap between the expected benefits of public programs to recipients and their apparent cost to taxpayers from now through the approximate life expectancy of the average Canadian

⁹ Statistics Canada, 2006

| 2006 Census Population by Age and Sex Comparison | Ontario | | | | | |
|--|---------------------|-----|----------------|-----|----------------|-----|
| | Total Population | | Males | | Females | |
| Population by Age | 12,160,280 | | 5,930,700 | | 6,229,580 | |
| 0 to 4 years | 670,765 | 6% | 343,475 | 6% | 327,290 | 5% |
| 5 to 9 years | 721,590 | 6% | 369,675 | 6% | 351,915 | 6% |
| 10 to 14 years | 818,445 | 7% | 420,705 | 7% | 397,740 | 6% |
| 15 to 19 years | 833,110 | 7% | 427,185 | 7% | 405,925 | 7% |
| 20 to 24 years | 797,255 | 7% | 400,445 | 7% | 396,810 | 6% |
| 25 to 29 years | 743,690 | 6% | 360,520 | 6% | 383,170 | 6% |
| 30 to 34 years | 791,950 | 7% | 382,025 | 6% | 409,925 | 7% |
| 35 to 39 years | 883,985 | 7% | 430,215 | 7% | 453,770 | 7% |
| 40 to 44 years | 1,032,410 | 8% | 507,130 | 9% | 525,280 | 8% |
| 45 to 49 years | 991,975 | 8% | 486,390 | 8% | 505,585 | 8% |
| 50 to 54 years | 869,400 | 7% | 423,345 | 7% | 446,055 | 7% |
| 55 to 59 years | 774,530 | 6% | 378,535 | 6% | 395,995 | 6% |
| 60 to 64 years | 581,980 | 5% | 283,540 | 5% | 298,440 | 5% |
| 65 to 69 years | 466,240 | 4% | 222,640 | 4% | 243,600 | 4% |
| 70 to 74 years | 401,945 | 3% | 187,505 | 3% | 214,440 | 3% |
| 75 to 79 years | 338,905 | 3% | 149,580 | 3% | 189,325 | 3% |
| 80 to 84 years | 250,270 | 2% | 97,240 | 2% | 153,030 | 2% |
| 85 years and over | 191,810 | 2% | 60,550 | 1% | 131,260 | 2% |
| 65 years and over | 1,649,170 | 14% | 717,515 | 12% | 931,655 | 15% |
| Average age | 38.7 | | 37.7 | | 39.6 | |
| Median age | 39.0 | | 38.0 | | 39.9 | |
| Dominant age group | 40 to 44 years | 8% | 40 to 44 years | 9% | 40 to 44 years | 8% |

29%
3.7 million

48%
5.9 million

Figure 1.4: Statistics Canada, 2006

| 2006 Household Income by Age of Head of Household | Canada | | | | | |
|--|---------------|--------------|---------------|---------------|---------------|---------------|
| | All Ages | Age 15-24 | Age 25-44 | Age 45-64 | Age 65-74 | Age 75+ |
| 2006 Households by Income | 12,437,470 | 456,625 | 4,374,155 | 4,960,600 | 1,387,285 | 1,258,805 |
| Less than \$20,000 | 1,899,080 | 168,540 | 520,810 | 639,015 | 240,250 | 330,465 |
| \$20,000 - \$39,999 | 2,666,025 | 141,560 | 831,230 | 790,245 | 441,895 | 461,085 |
| \$40,000 - \$59,999 | 2,329,290 | 81,000 | 874,805 | 852,580 | 299,070 | 221,830 |
| \$60,000 - \$79,999 | 1,831,015 | 37,420 | 747,480 | 756,570 | 175,430 | 114,120 |
| \$80,000 - \$99,999 | 1,303,640 | 15,520 | 542,195 | 595,580 | 93,055 | 57,295 |
| \$100,000 - \$124,999 | 1,026,575 | 7,385 | 406,550 | 517,285 | 61,620 | 33,735 |
| \$125,000 - \$149,999 | 562,060 | 2,660 | 203,020 | 311,210 | 29,025 | 16,140 |
| \$150,000 and over | 819,780 | 2,540 | 248,065 | 498,100 | 46,925 | 24,140 |
| \$200,000 and over | 351,230 | 785 | 98,975 | 217,290 | 22,540 | 11,635 |
| Dominant Income Range | \$20K - \$40K | < \$20K | \$40K - \$60K | \$40K - \$60K | \$20K - \$40K | \$20K - \$40K |
| Median Income | \$53,827 | \$28,445 | \$59,091 | \$65,246 | \$40,768 | \$32,967 |
| Average Income | \$69,548 | \$34,111 | \$65,354 | \$71,562 | \$49,903 | \$40,522 |

Figure 1.5: Statistics Canada, 2006

SECTION - II - INDUSTRIES' GROWTH PROJECTIONS

This section examines economic projections in relation to demographic forecasts which are related to baby boomers and the start of their retirement in 2012. This section will include projections related to the construction industry, for both residential and non-residential construction and also examines projections related to other major industries including the health care industry, the gaming industry and the sports industry, which are driven by levels of supply and demand generated by the baby boomers and the elderly population and would have significant implications on the shape of the built environment and the future of planning.

The retirement of the baby boomers impacts 5 major economies and industries. Ontario's key economic indicators, suggested by the Ontario Ministry of Finance and Statistics Canada, show the past 30 years GDP average equal to the projected GDP for the next 20 years at 2.6 rate with a decline in the Labour Force Growth by 56%, it also suggests that Capital Stock Growth will increase by 40% over the next 20 years as indicated in Figures 1.6 and 1.7.

| Ontario Key Economic Variables | | | | | | Table 1 |
|--------------------------------|---------------------|----------------------|---------|---------|---------|---------|
| | Actual (Average) | Projection (Average) | | | | |
| | 1982-09* | 2010-14 | 2015-19 | 2020-24 | 2025-30 | 2010-30 |
| Real GDP Growth | 2.6 | 3.1 | 2.6 | 2.4 | 2.3 | 2.6 |
| Labour-Force Growth | 1.6 | 1.3 | 0.8 | 0.7 | 0.7 | 0.9 |
| Real Capital Stock Growth | 1.8 | 1.8 | 3.1 | 2.5 | 2.6 | 2.5 |
| Real GDP per Capita Growth | 1.1 | 1.9 | 1.4 | 1.2 | 1.1 | 1.4 |

*Data for 2009 are Ontario Ministry of Finance's estimates except for labour-force growth.
Sources: Ontario Ministry of Finance and Statistics Canada.

Figure 1.6: Ontario Economic Indicators

Also, patterns of household spending provide a general understanding of the relation between expenditure and purchasing power in on the one hand and the volume associated with certain economic industries on the other hand as indicated in Figure 1.8.

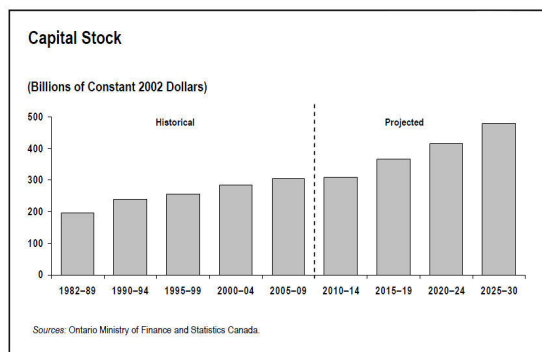


Figure 1.7: Ontario Economic Indicators

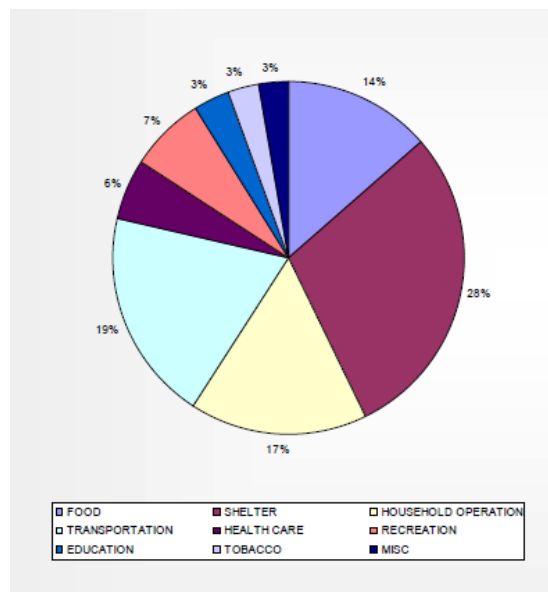


Figure 1.8: Ontario Household Spending

Part 1. Housing Starts

With respect to the construction industry and to housing construction in particular, baby boomers play a significant role in this market. Aging population and Boomers will be seeking to satisfy three main needs: 'amenities', 'assistance' and 'disability services'. A study conducted in the United States suggests that approximately half the boomer population will be seeking for amenities, and if the needed amenities exist within their community the need to migrate will be minimal¹⁰. In Ontario, the demand for accommodation is projected to be in high demand, new housing starts will grow by 50% over the next 10 years, as suggested by the Construction Sector Council in Figure 1.9, mainly due to immigration rates, and little to do with relocation of boomers. However, housing renovation rates will grow by approximately 15% which is mainly attributed to boomers and seniors aging in place¹¹.

The market need will be based on demand of retirement communities and infill housing projects near major city centres, developers have the opportunity to provide boomers with changing needs communities that could integrate the living environment with

¹⁰ Tremain, Kerry, "Where Will All the Boomers Go?" Retrieved December 02, 2011 from : (http://www.civicventures.org/publications/articles/where_will_all_the_boomers_go.cfm)

¹¹ Construction Sector Council, (<http://www.constructionforecasts.ca/forecast/table>)

needed amenities and services and promote accessibility based on emerging standards and guidelines, which are detailed in Chapter 2.

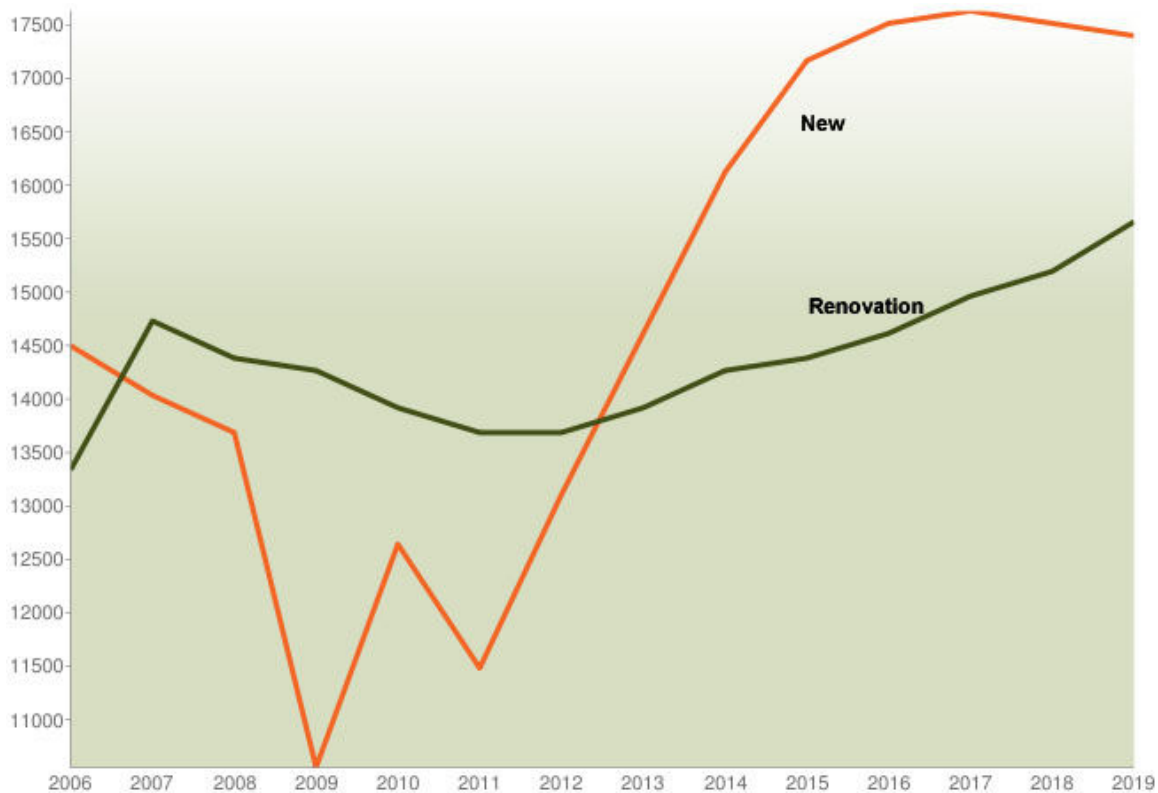


Figure 1.9: Housing Starts vs. Housing Renovation forecast

Part 2.Non-Residential Starts

Institutional and government starts, as suggested by the Construction Sector Council in Figure 1.10 below, will grow at normal rates at 5%, the oversupply or the decline of education and youth related facilities will offset the growth of construction of facilities related to retirement, such as health care facilities.

Commercial development will grow by 56% over the next 10 years¹² due to the increase of Capital Stock Growth rate generated by the boomers retirement savings as illustrated by the Ontario Economic Indicators, which is mainly attributed to the retirement of boomers as indicated earlier. Studies suggest that retail growth will be modeled after

¹² Construction Sector Council, (<http://www.constructionforecasts.ca/forecast/table>)

servicing the baby boomers' market with high attention to customer services, where the design of such facilities would be predicated on the provision of accessibility and social experience¹³. A speculative design model of the future shape of grocery stores is presented in Chapter 2 for further reference. A report released by the government of Ontario in 2011 suggests three scenarios for retail growth ranging from 2% and 7% over the next five years if such facilities adhere to Accessibility for Ontarians with Disabilities Act (AODA), this growth could translate to \$3.8-\$9.6 billion in Ontario alone¹⁴.



Figure 1.10: Commercial and Institutional Starts forecast

Part 3. Health Care Industry

The North American health care system is an institutional system based on federal funding and is considered one of the major industries that will be heavily impacted by

¹³ K.Foot, David: *[Boom, Bust & Echo 2009]*, Toronto, Stoddart Publishing Co, 2009

¹⁴ Martin Prosperity Institute, "Releasing Constraints: Projecting the Economic Impacts of Improved Accessibility in Ontario". P.145. Retrieved from: (<http://martinprosperity.org/insights/insight/releasing-constraints-the-impacts-of-increased-accessibility-on-ontarios-economy>)

this demographic phenomenon.

According to a Statistics Canada study from 2007, health care government expenditure will increase by 66% for people over 65 years over the next 20 years due to the dramatic increase of the retired population (see Figure 1.11). As suggested earlier, baby boomers will represent a \$1.5 trillion liability, therefore, studies anticipate a shift in the health care system from an institutional system to a home and community-based system. This would provide an opportunity for the development of integrated community facilities, such as community integrated clinics, and would promote home care operations backed with technologically advanced smart homes and telehealth systems. Emerging models, presented in detail in Chapter 2, indicate the implementation of the communal based care system currently taking shape across Europe and highly recommended by the World Health Organization guideline for Age-friendly cities.

| Per-Capita Provincial Government Health Spending, by Age Group, Ontario, 2007, Current Dollars | | | |
|---|--------------------------------------|--|--|
| Age Group | Spending Per Person (\$)¹ | Share of Population, 2007 Actual (Per Cent) | Share of Population, 2030 Projection (Per Cent) |
| <1 | 9,188.0 | 1.1 | 1.1 |
| 1-4 | 1,292.6 | 4.4 | 4.3 |
| 5-14 | 1,047.6 | 12.0 | 11.2 |
| 15-44 | 1,706.3 | 42.8 | 37.3 |
| 45-64 | 2,823.6 | 26.5 | 24.2 |
| 65+ | 10,330.7 | 13.2 | 21.9 |
| 65-74 | 6,883.1 | 6.9 | 11.7 |
| 75-84 | 11,843.7 | 4.7 | 7.4 |
| 85+ | 20,702.4 | 1.6 | 2.8 |
| Total | 3,127.0 | 100.0 | 100.0 |

Figure 1.11: Ontario Health Spending over the next 20 years, Source: Statistics Canada

Part 4. Sports and Recreation

One of the key indicators in this market is the 'participation rate', the lowest rate is attributed to people over 55 years and up at 18% of the overall population. Studies show that the highest participation rate is about 40% for people with \$80,000 income and up.

This participation rate suggests that passive recreation will be one of Canada's most

popular leisure activities. David Foot in his book *Boom, Bust and Echo* stresses this fact by indicating that the older population increasingly disengage with active sports and engage with recreational swimming and walking. The declining level of sport activity generates a lifestyle oriented towards cultural activities and hobbies such as reading and attendance at museums and theatres¹⁵.

SECTION - III - CONCLUSION

The baby boomers are the largest age group in Canada and have a relatively strong purchasing power. Therefore, future markets and the future economy will be influenced by the basic needs of baby boomers over the next 20 years. Social, economic and political agendas driving planning policies will be predicated on meeting the emerging market demands in a manner that would maximize efficiency and ensure minimum capital government spending on infrastructure and healthcare. So, it is more likely that the elderly population would consider the option of aging in place - as projected - which would result in directing the growth of amenities and services including commercial, health and wellness, and cultural facilities to existing communities with existing infrastructure in forms of redevelopment, rehabilitation and reconstruction factoring in the physiological demands in the process.

The challenges attributed to the retirement of baby boomers require a level of innovation with regards to adaptation to a lifestyle shaped by the 1960s and 70s cultural revolution, which was influenced by liberalism and political activism, and involved youth in popular social movements - known as hippies - calling for liberation in society and freedom in all of its aspects, accompanied by a growing interest in Eastern religions and philosophy. The 1960s is also considered a defining moment in 20th Century of art and popular music highly engaged with the counterculture youth movement creating revolutionary themes and challenging existing taboos.

Therefore, the level of integration between amenities, assistance and disability services with existing communities must cater to the desire of the baby boomers to maintain a

¹⁵ K.Foot, David: [*Boom, Bust & Echo 2009*], Toronto, Stoddart Publishing Co, 2009

culturally rich lifestyle through their years of retirement and sustain the notion that aging does not mean decrepitude with the support of promoting a physically active lifestyle.

CHAPTER 2 - THE SOCIAL AGENDA - CHALLENGES AND OPPORTUNITIES

The second chapter of this research focuses on the demands and needs essential to providing an age-friendly environment both socially and physically. This chapter defines the social agenda and the different aspects related to the social contextual conditions for the elderly in order to derive a programmatic agenda aimed at resolving some of the issues facing the elderly. In addition, current projects and proposals are presented and analysed for the purpose of identifying current trends, models and design strategies that are instrumental in addressing the challenges and in representing the opportunities available for the elderly population.

SECTION - I - INTRODUCTION

Aging is defined medically as metabolism and cellular structure dysfunction and damage; this damage causes decline of health which contributes to physical and mental illness. Matthias Hollwich characterizes aging as a one-way journey equal to travelling to space¹⁶, which involves explorations and new experiences. Therefore, the purpose of the social agenda is to help the elderly age gracefully in a safe and comfortable environment that caters to their needs.

There are two main challenges facing the elderly today:

1. The surge of the number of the elderly population in disproportionate relation to the capacity of institutions and communities. Globally, the rising number of people of advanced age - over 80 years of age - will equal 4.3% in 2050 compared with 1.3% in 2010¹⁷, which is considered disproportionate with the number of nursing care facilities provided, and in turn, the level of care in terms of quantity and quality will change dramatically in the near future.

¹⁶ Hollwich, Matthias, "new aging conference" extracted from: (http://fora.tv/partner/New_Aging)

¹⁷ World Health Organization: *[Global Age-friendly Cities: A Guide]*, France, WHO, 2007

Another demographic challenge is the decrease of fertility rates which will negatively impact on the long term the nature of informal communal care provided to the elderly by families, friends and neighbours.

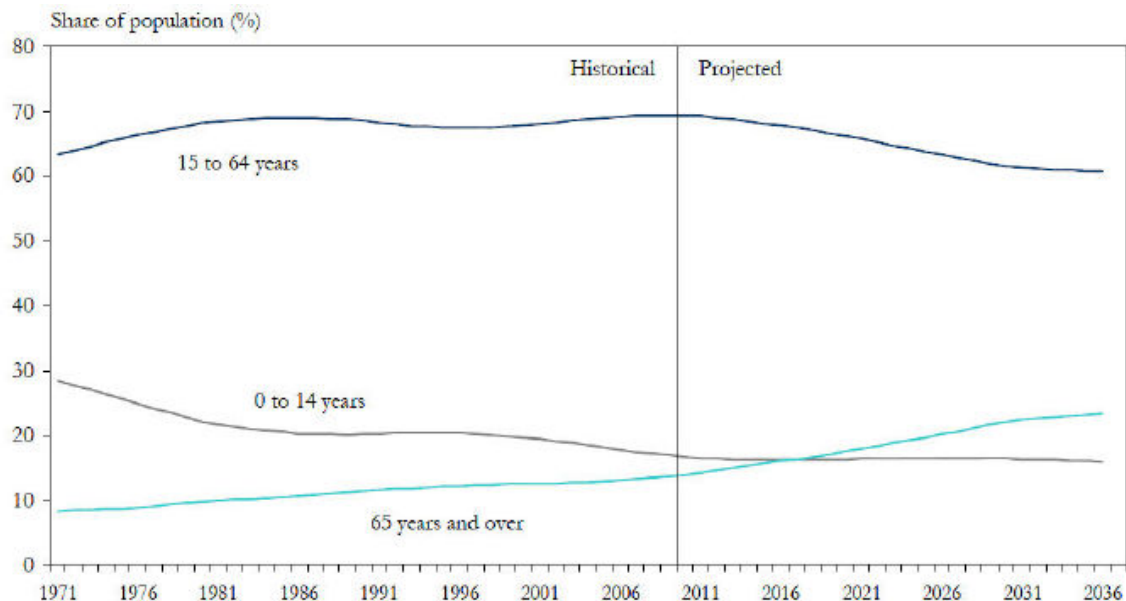


Figure 2.1: Statistics Canada and Ontario Ministry of Finance Projections

The demographic surge of the elderly population will also significantly impact the cost of services and programs to governments - as indicated in Chapter 1 earlier - and individuals; the typical cost of retirement homes in Ontario - according to comfortlife.ca - currently range between \$1,500 and \$7,500 per month, which raises a significant challenge to 1/5th of Ontario's seniors who currently earn less than \$20,000 per year.

2. The quality and the condition of the elderly assisted living environment. Currently there are two major models of assisted living. The first model is widespread in southern Europe and Asia, which is based on intergenerational care¹⁸. The second model is most common in northern Europe and North America, where care is provided by trained personnel and a network of home care services¹⁹.

The North American model over the last century relied on the dormitory model in

¹⁸ Hausenbiegl, Angelika, *[Perspective on aging across various cultures]*, edited by Feddersen, Eckhard and Ludtke, Insa, *A Design Manual, Living for the Elderly*, Berlin, Birkhauser, 2009

¹⁹ Ibid.

retirement homes accompanied by the model of the acute care hospital, this model promoted by federal insurance policies and programs, forced a scenario on old people who needed to move away from home for many reasons, including medical, safety and security, to move into an isolated form of living, where richness of life and choice is significantly reduced as a result of the institutional design qualities which represent a translation of compliance of code and standards into a built form.

SECTION - II - EMERGING MODELS

The challenge facing architects and urban planners today is minimizing dependence on professional care models and maintaining an everyday way of life. New innovative models are needed to go beyond the realm of the institutional paradigm and foster self organized arrangements, integrate forms of mutual assistance, and provide different options that would cater to different needs and requirements, and most importantly assert a sense of place and belonging.

The following precedents represent a compilation of current trends and practices in the realms of both assisted living and independent living environments for the elderly, which I consider as an important component of this research in terms of defining emerging programmatic and social agendas

1. The first model included in this study is concerned with the rejection of the idea of characterizing old age as a 'disease', and employs healthcare services as a subsidiary amenity provided to maintain a mentally and physically active lifestyle for the elderly rather than a main component of the living environment. This position predicated a shift in the concept of care from traditional western medical care to therapeutic and preventative, such as the use of vitamins, body massage, stress-reduction exercises and meditation²⁰, which in turn plays as an important psychological effect helping the elderly to age gracefully.

²⁰ B. Dwight, Maria: *[From retirement-communities of care to communities of meaning]*, edited by Feddersen, Eckhard and Ludtke, Insa, *A Design Manual, Living for the Elderly*, Berlin, Birkhauser, 2009

One of the recent examples for this reinvented nursing home model is by Arnold Gelauf from Arons en Gelauff Architecten. Gelauf proposes a re-examination of the typology of the institutional model of care by focusing on the aspect of 'home' in care homes, where the promotion of independence, strength, dignity and health is possible if the concept of 'CAREhome' is perceived as 'careHOME'²¹. De Plussenburgh nursing home is located in Amsterdam, completed in 2006 and combines a health care amenity with 104 apartments for the elderly built with the concept of 'stealth care'²², which structures the development as a regular housing development discreetly joined with a hidden health care amenity. The overall design of the complex highlights the residential component as the main design feature of the development floating at 11m above a pond and a recreational garden combined with leisure amenities, where the health care amenity is housed in a separate block at the back end of the development and linked to the main building by a discrete circulation path.

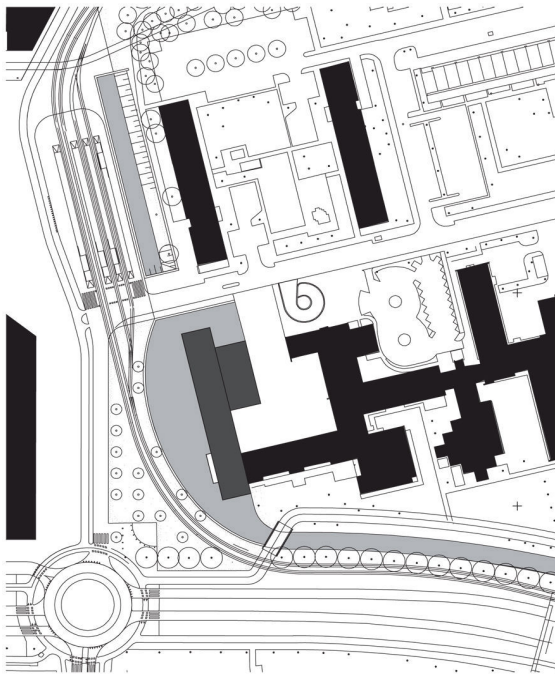


Figure 2.2: De Plussenburgh, Amsterdam, 2006



2. The second model is driven by the concept of breaking the rigidity of the institutional

²¹ Gelauf, Arnold, lecture, "new aging conference" extracted from:
(http://fora.tv/partner/New_Aging)

²² <http://www.aronsengelauff.nl>

model, which is driven by standards and regulations concerned with specialty care environments and the reinvention of this environment in terms of “sensitive pragmatism and artistic functionality”²³.

Erhard Kinzelbach from Knowspace architecture characterizes retirement communities and nursing homes as hospitals, which are highly regulated, highly standardized, very repetitive, have little space for privacy, have little space for collective interaction and are known to be a program driven facility. His proposal is based on the strategy of searching for fields of intervention, which in his mind are limited to four elements:

A. Common external space, B. External façade, C. Internal common space, and D. Internal façade²⁴.

In a Nursing home (renovation and extension) in Hainburg, Austria completed in 2009, Kinzelbach addresses the issue of repetition in the institutional model by imposing variation on the modular configuration of the building through folding both the internal and the external facades providing each unit with a different external orientation. On the internal façade the folding marks each individual room and generates niches in front of the entrance doors that can be occupied by the inhabitants in various ways, thus rendering the corridor as more than just a space for circulation.

Another example is provided by Manuel Ocana from Manuel Ocana Arquitectos in Santa Rita Geriatric Center in Spain, completed in 2009²⁵, which also focuses on the concept of breaking the institutional typology, with a strategy which he calls “sensitive pragmatism and artistic functionality”²⁶ by eliminating all corridors and architectural barriers in an open plan, in which all the rooms have direct access to an internal garden.

This concept embraces a high level of accessibility, which I believe instils a sense of community for the facility’s users where all program components and all users are

²³ Ocana, Manuel , lecture, “new aging conference” extracted from:
(http://fora.tv/partner/New_Aging)

²⁴ http://www.knowspace.eu/ERHARD_AN-HE_KINZELBACH/HOME/HOME.html

²⁵ Feddersen, Eckhard and Ludtke, Insa, *A Design Manual, Living for the Elderly*, Berlin, Birkhauser, 2009

²⁶ Ocana, Manuel , lecture, “new aging conference” extracted from:
(http://fora.tv/partner/New_Aging)

sharing one open surface and all activities happen within a clear line of sight.

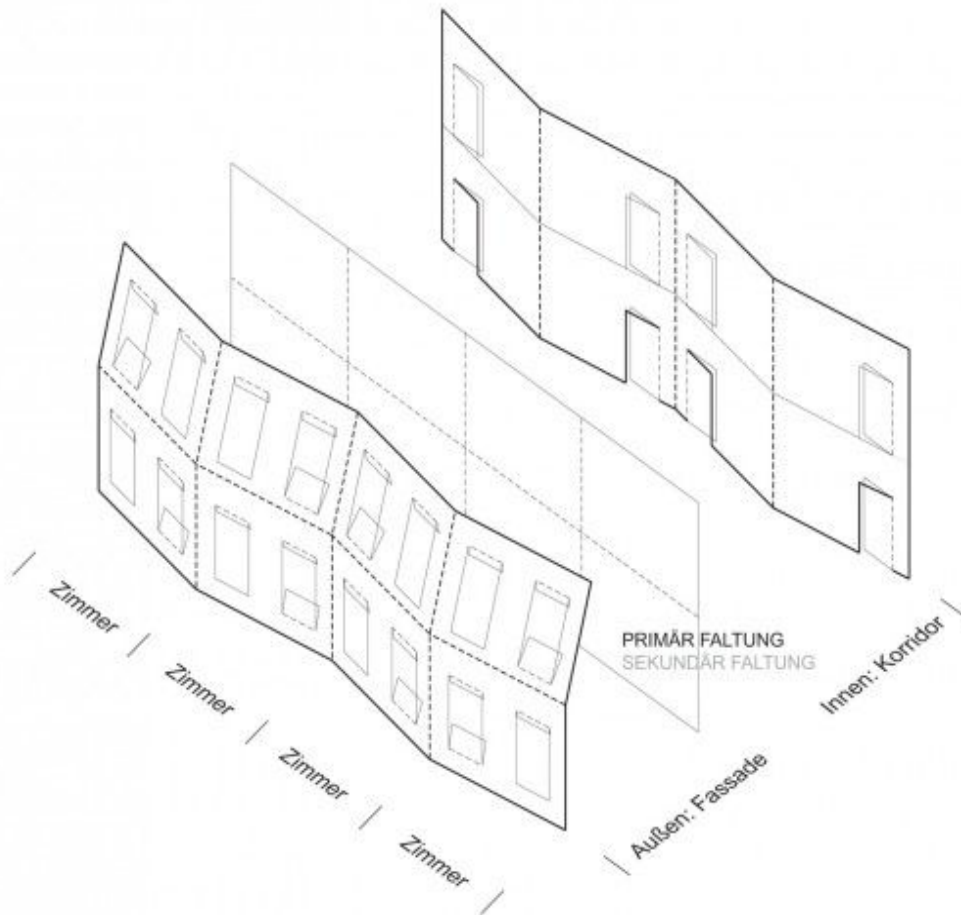


Figure 2.3: Nursing home (renovation and extension) in Hainburg, Austria, 2009

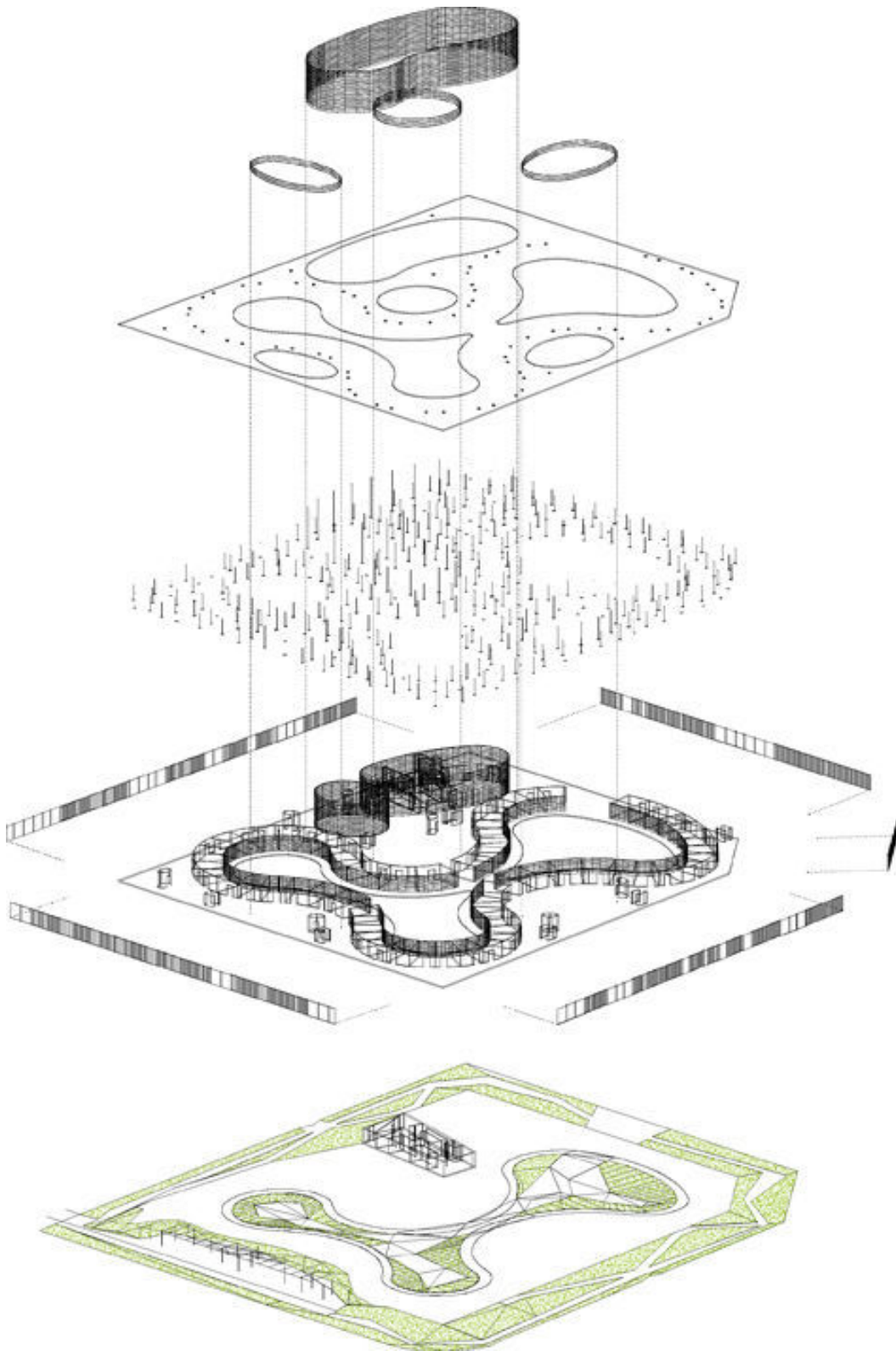


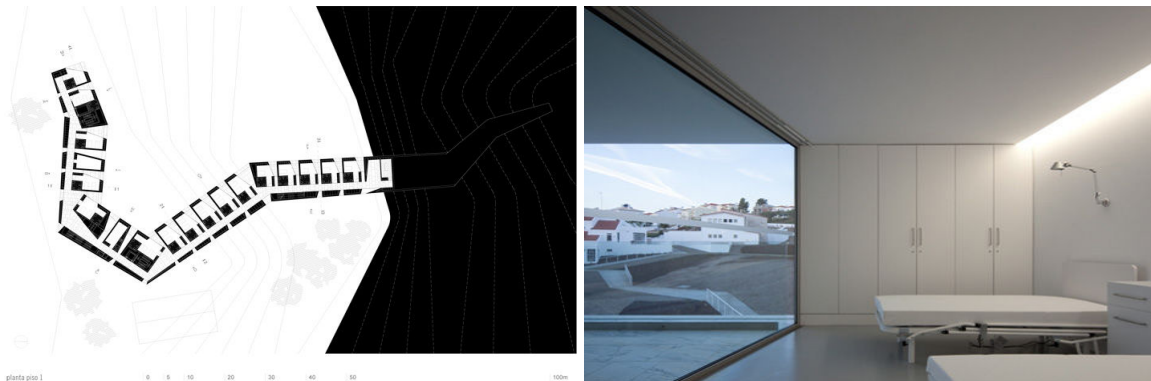
Figure 2.4: Santa Rita Socio Geriatric Centre, Spain, 2009



Figure 2.5: Santa Rita Socio Geriatric Centre, Spain, 2009

3. The third model focuses on the concept of providing sensorial qualities by engaging with the natural environment through architectural formal strategies.

Architect Aires Mateus manifests this concept in his Nursing home project in Alcácer do Sal in Portugal, completed in 2010 where the overall linear form of the building engages with the sloped topography of the site and all individual rooms have maximum exposure to daylight, which is achieved by locating the windows for each room along its length²⁷.



²⁷ Barac, Matthew: [Housing for the Elderly by Aires Mateus, Alcácer do Sal, Portugal], extracted from: (<http://www.architectural-review.com/buildings/housing-for-the-elderly-by-aires-mateus-alccer-do-sal-portugal/8612101.article>)



Figure 2.6: Nursing home project, Alcácer do Sal, Portugal, 2010

4. The following model represent an ‘anti aging’ concept, where architecture serves as a tool for preventing aging by providing a spatial configuration which urges its users to exercise and move within it.

Harvard Business Review listed this idea as one of the 20 breakthrough ideas for 2009, created by architect Madeline Gins from Arakawa + Gins. Lew McCreary from HBR indicated in his article ‘Stumbling to a Longer Life’ that the architects have declared their “intention not to die by creating uncomfortable spaces designed to enhance longevity. Steeply undulating concrete floors with cobble-like protrusions express their belief that

environments can keep an excess of comfort from degrading physical skills”²⁸.

This idea started as a research project by Arakawa + Gins producing what they call a ‘Bioscleave House’ first built in East Hampton, NY in 2008, represented in Figure 2.7 below. Madeline Gins says that this idea was a development on the concept of ‘Reversible Destiny’ loft which they built in Mitara, Tokyo, Japan in 2005. ‘Reversible Destiny’ lofts, in figure 2.8 below, require residents to “examine minutely the actions they take and...recalibrate their equanimity and self-possession, causing them to doubt themselves long enough to find a way to reinvent themselves.”²⁹



Figure 2.7: Bioscleave House, East Hampton, NY , 2008



Figure 2.8: Reversible Destiny lofts, Mitara, Tokyo, Japan, 2005

²⁸ McCreary, Lew: [Stumbling to a Longer Life], extracted from: (<http://hbr.org/web/2009/hbr-list/stumbling-to-a-longer-life>)

²⁹ Ibid.

I believe the challenge this idea provides at the moment is the validation of the architect's claim through long term monitoring and research regarding the behaviour of the occupants and metrically measure the impact this type of environment has on health and on aging process.

5. One of the key models, I believe, for North America to start to adopt is the model of 'collegiality', which perceives the elderly population as an important resource of knowledge for the community and provides them with the opportunity to be integrated back with society through civic and social participation, establishing an environment of social connectivity and intergenerational interaction in the process.

A recent example of collegial models is a proposal by Matthias Hollwich from HWKN Architects for a living and learning centre in Ivory Coast. It is a retirement community for Catholic priests that are excluded from the traditional family based model of elder care in Cote D'Ivoire which includes a school at its centre configured in a way that allows the school facilities and classrooms to be spread along the central axis of the community³⁰.

³⁰ <http://hwkn.com/#960992/AGING-IN-AFRICA>



Figure 2.9: Ivory Coast Retirement Community, Lagoon Aby, Ivory Coast, ongoing



Figure 2.10: Ivory Coast Retirement Community, Lagoon Aby, Ivory Coast, ongoing

6. The final model in this study deals with the strategy of rethinking 'aging' as a powerful factor in the urban planning process. This strategy, I believe, emerged from three different levels. The first level is the urban model of 'town centres' or 'lifestyle centre' which recently started to take shape in suburban developments in the United States inspired by old European city models - a more detailed study on this type of urban development is presented in section-iii below -, the second level is the adoption of Universal Design principles to be included in the urban environment planning process, influencing in return different initiatives, such as 'walkable communities' and close proximity to services and amenities, which was emphasized in 2007 by the World Health Organization under 'Global Age-friendly Cities, Guideline' initiative (a further discussion of WHO guideline is included under section-iv below).

The model of combining 'urbanism planning process and aging as a factor'³¹ is highly popular in Europe, and known in the Netherlands as 'residential care zones' - or 'Woonzorgzone' - where care and service is provided to all ages. In Denmark, the legislation is mainly focused on promoting development of intergenerational neighbourhoods; as a result, the institutional care model was abandoned and since 1987 no housing schemes for old people have been built³².

This model is organized in such a way that informal support structures complement professional care services, where planning principles are based on promotion of network based services distributed in the city instead of providing one central care facility.

One of the proposals that I consider now at the frontier of the subject of aging and urbanism is 'Geropilis'; 'the city for the old', it is a study model conducted by HWKN Architects and the Bauhaus Foundation to examine a strategy for a German city retrofit with aging in mind.

This model promotes the concept of aging in place through retrofitting existing city structures and infrastructures with amenities which cater to the elderly. Hollwich argues

³¹ Hausenbiegl, Angelika: *[Perspective on aging across various cultures]*, edited by Feddersen, Eckhard and Ludtke, Insa, *A Design Manual, Living for the Elderly*, Berlin, Birkhauser, 2009

³² Ibid.

that this adaptive reuse model is essential for retirement options for people with modest means and also minimizes government's capital cost in the long term³³.

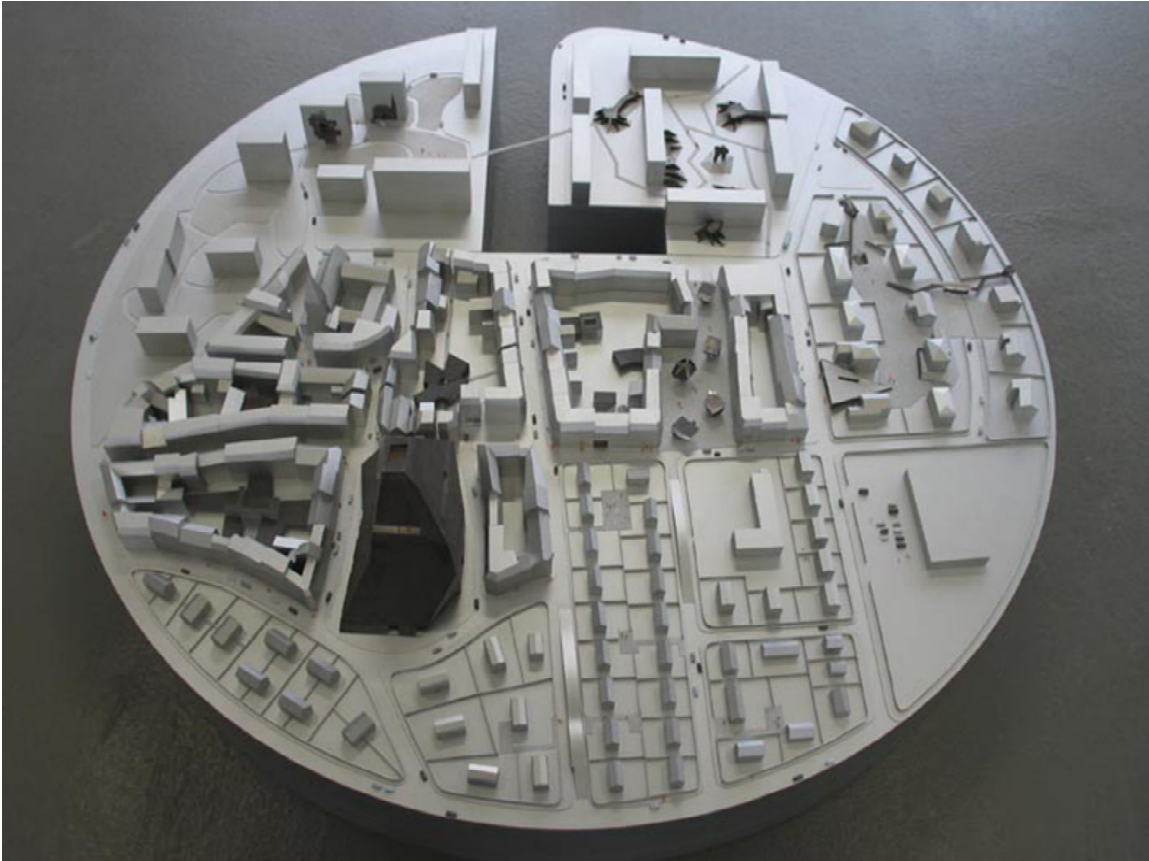


Figure 2.11: Geropolis, Germany, Research Model

Some of the main concepts and services promoted in Geropolis are:

- A. 'Hotel Urbanism', where services and conveniences are installed and distributed around the city, such as urban lounges, cafés, toilets and kiosks.
- B. 'Village in the City', retrofit, rebuild mega structures to function as small communities, a model that is suitable for East Germany's tall buildings. Also, install biotopes, or small community gardens which can be used for small scale agricultural production and as a recreational amenity.
- C. 'Magic Mountain', installed in the city centre, functions as an attraction for the aging

³³ Hollwich, Mattias, lecture at PICNIC 2010, extracted from:
(<http://hwkn.com/#1009986/LECTURES-EVENTS>)

population with cinematographic qualities similar to clubhouse and suburban leisure mall.

D. 'Knowledge Campus', which focuses on knowledge transfer and social participation through the provision of libraries, research centres, seminar rooms and public gardens in the city centre.

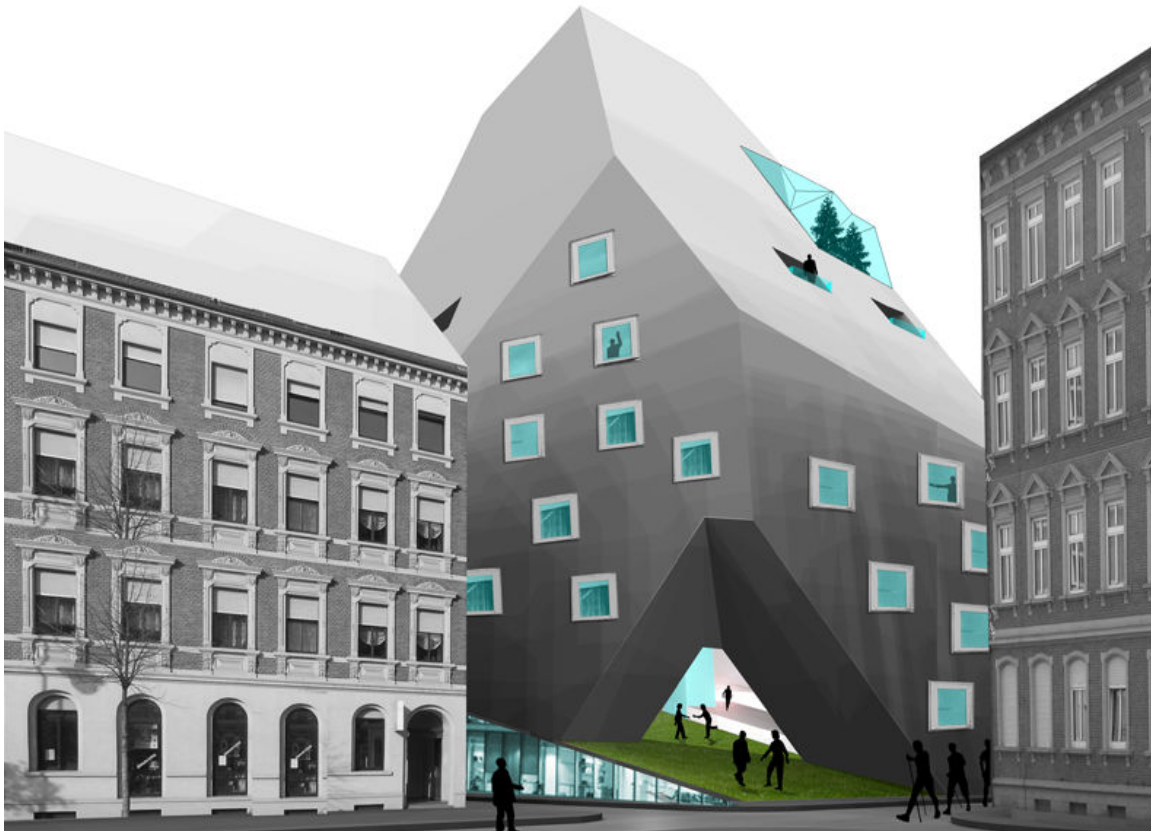
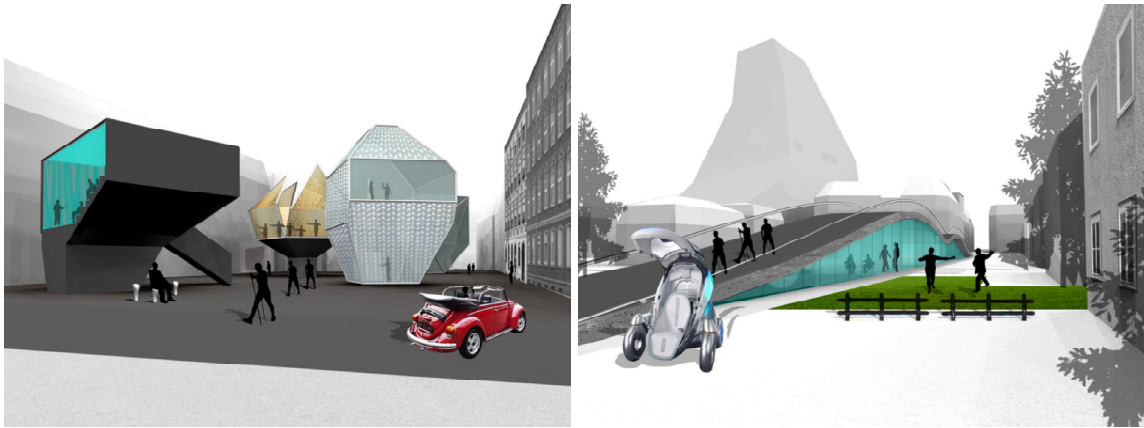


Figure 2.12: Geropolis, Germany, Research Model



Figure 2.13: Geropolis, Germany, Research Model

I believe Geropolis provides an urban lifestyle that is likely to be the model for the future, where dense network of services and cultural activities become major city attractors for all generations. In addition, this model addresses a sustainable lifestyle which can be achieved with densification of existing environments, and could also work as a model for accommodating the anticipated growth of the different industries in Ontario as mentioned in Chapter 1.

SECTION - III - 'UNIVERSAL DESIGN'

In light of the discussion regarding emerging models concerned with rethinking the built environment for the elderly, it is important to synthesise the tools and the principles designated for addressing special physiological needs, and to examine the significance of Universal Design as a tool recently being incorporated with both architectural and urban design processes.

Part 1. Definition

The term 'Universal Design' was first coined by Ronald Mace in 1980, and included under the Human Rights Act - an act associated with Commonwealth countries and initiated in Canada in 1977 as the Canadian Rights Act - and the United Nations Convention on the Rights of Persons with Disabilities (UN CORD) which defines Universal Design as "the design of products , environments, programs and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"³⁴.

Universal Design, as a design tool, was mainly incorporated in housing projects that are specifically designed for the elderly in response to United Nations Principles for Older Persons (resolution 46/91), which is concerned with the recognition of the importance of living conditions for the elderly and calls for independence, participation, care, self fulfilment and dignity as well as active and independent living for as long as possible³⁵. As a design tool, it was implemented globally by a number of institutes, such as: 'Design for All' in Spain, 'Universal Design GmbH' in Germany, 'Global Universal Design Commission' In the United States, 'Design for All Europe' in Ireland, 'Design for All Institute' in India and 'Planning for All' in Norway.

In Ontario, Universal Design is being implemented under the Ontario Disability Act (ODA) and Accessibility for Ontarians with Disabilities Act (AODA). ODA is specifically designed to ensure the rights of individuals with disabilities in the workplace and in the community, which requires all organizations, both public and private, to comply with AODA standards and Customer Service Standards effective January 2012. The act includes 11 standards addressing policy, practice, procedure and training that aim at achieving accessibility for people with disabilities by 2025.

³⁴ F.E Preiser, Wolfgang and H. Smith, Korydon: *[Universal Design Handbook, Second Edition]*, New York, McGraw-Hill Companies, 2011

³⁵ Tauke, Beth: *[Universal Design: a Declaration of Independence]*, edited by Feddersen, Eckhard and Ludtke, Insa, *A Design Manual, Living for the Elderly*, Berlin, Birkhauser, 2009

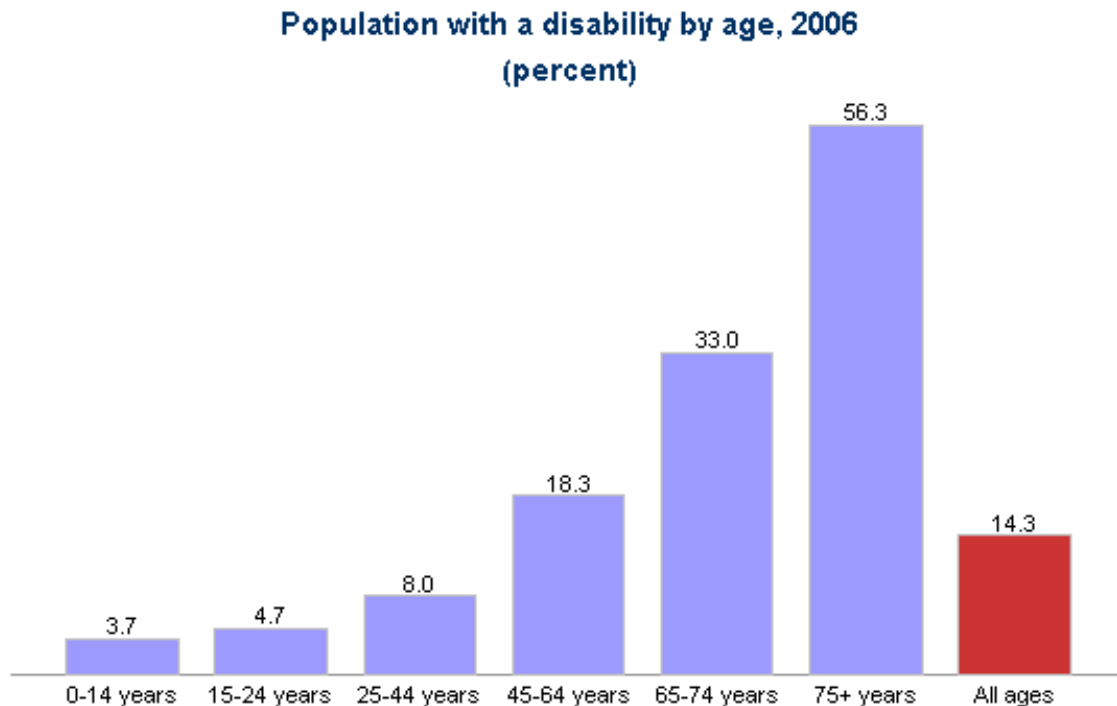


Figure 2.14: Population with a Disability/ Source: Statistics Canada

The significance of Universal Design is not only associated with social participation through barrier free environments, but it also has economic significance if age and disability are perceived as economic factors and as measures of monetary return based on the inclusion of isolated and excluded groups with physical disabilities. A study conducted by the government of Ontario, 'Releasing Constraints', anticipates a 1.3% increase in Ontario's per capita GDP as a result of implementing AODA to actively help engage Ontario's disabled in civic and social activities³⁶. And according to Ontario's Ministry of Community and Social Services; one in seven people have a disability; the majority of this percentage is attributed to people aged 65 years and over³⁷.

In the process of implementing Universal Design by different global institutions, the definition and the terminology started to evolve based on different criteria set by

³⁶ Martin Prosperity Institute, "Releasing Constraints: Projecting the Economic Impacts of Improved Accessibility in Ontario". P.145. Retrieved from: (<http://martinprosperity.org/insights/insight/releasing-constraints-the-impacts-of-increased-accessibility-on-ontarios-economy>)

³⁷ Ontario's Ministry of Community and Social Services, extracted from (<http://www.mcscs.gov.on.ca/en/mcscs/programs/accessibility/index.aspx>)

politicians and practitioners addressing a variety of specific purposes, ranging from barrier-free and accessibility models to models that are fit for all people with different disabilities other than immobility. The establishment of a clear criteria in 1997 by the U.S. Department of Education's National Institute on Disability and Rehabilitation Research (NIDRR) through seven principles provided the concept of Universal Design with a comprehensive framework for all design disciplines to operate with as well as an evaluation tool for the performance of the designed outcome. According to the Universal Design Handbook, these seven principles are:

“Principle 1: Equitable Use: The design is useful and marketable to people with diverse abilities.

Principle 2: Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.

Principle 3: Simple and Intuitive Design: Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills or current concentration levels.

Principle 4: Perceptible Information: The design communicates necessary information effectively to users, regardless of ambient conditions or the user's sensory abilities.

Principle 5: Tolerance for Error: The design minimizes hazards and adverse consequences of accidental or unintended actions.

Principle 6: Low Physical Effort: The design can be used efficiently and comfortably and with minimum fatigue (in order to maintain neutral body positions and use minimum effort, minimise repetitive actions and minimise sustained physical efforts).

Principle 7: Size and Space for Approach and Uses: Appropriate size and space is provided for approach, reach, manipulation and use regardless of user's body size, posture or mobility.”³⁸

Part 2. Critique

The principles above demonstrate a paradigm shift where the capacity of Universal Design is not only limited to accessibility and barrier-free environments. However, the

³⁸ F.E Preiser, Wolfgang and H. Smith, Korydon: *[Universal Design Handbook, Second Edition]*, New York, McGraw-Hill Companies, 2011

implementation of Universal Design principles, according to Marcelo Guimaraes - assistant professor at the Universidade Federal de Minas Gerais, in Brazil, and the director of ADAPTSE, the university's research lab on accessibility issues - is considered to be a mechanical process lacking 'design' or the 'poetic' aspects of design and mainly concerned with performance, which in his mind, is a process very similar to the process and principles of 'McDonaldization'³⁹, where production is driven by 'efficiency' - which is associated with a quick fix for a complex problem - 'predictability' - associated with lack of innovation - 'calculability' - associated with lack of quality - and 'behavioural control' - which is associated with the mechanical and the non-human method of standards application - which in my mind, is a precise description of the rigid institutional qualities - often reflected in universally designed environments - produced in a process similar to translation of codes and standards of minimum compliance into built form.

Guimaraes argues that writing poetry rather than structuring grammar enriches semantics about accessibility for all, and helps reduce the stigma associated with Universal Design. This stigma prompted Emory Baldwin, founder of FabCab - an architectural company concerned with the production of universally designed prefabricated houses - to introduce the term "Invisible Accessibility" as a concept, which transforms the perception of universally designed environments into an acceptable and applicable concept or tool for everyone to use⁴⁰.

According to Edward Steinfeld, the Director of IDeA Center - Centre for Inclusive Design and Environmental Access - the concept Universal Design is evolutionary, and "there are no absolute levels of performance since each project context determines what can be achieved. It is a continuous improvement process and can be implemented regardless of constraints or the level of technology available"⁴¹. However, the current design principles are unable to address concerns regarding "language and clarity, difficulty in translation, lack of an explicit evidence base, and lack of a focus on

³⁹ Ibid.

⁴⁰ FabCab Builds Universal Design Prefabs for "Aging in Place", extracted from: (<http://www.fastcodesign.com/1662127/fabcab-builds-universal-design-prefabs-for-aging-in-place>)

⁴¹ Rolling Rains Report, Precipitating Dialogue on Travel, Disability, and Universal Design, "Edward Steinfeld on the Goals of Universal Design", extracted from: (<http://www.rollingrains.com/2009/08/edward-steinfeld-on-the-goals-of-universal-design.html>)

affordability”. Steinfeld suggests that the seven design principles need to be divided into two categories; the first one is related to ‘support for activities’, which includes the following four concepts:

“Body fit: Accommodating a wide a range of body sizes and abilities. Comfort: Keeping demands within desirable limits of body function and perception. Awareness: Insuring that critical information for use is easily perceived. And Understanding: Making methods of operation and use intuitive, clear and unambiguous”⁴².

The second category is related to support for social participation, and includes the following concept;

“Social integration: Treating all groups with dignity and respect. Personalization: Incorporating opportunities for choice and the expression of individual preferences. And Appropriateness: Respecting and reinforcing cultural values and the social and environmental context of any design project”⁴³.

Steinfeld argues that this framework provides the answer to the misconception of Universal Design as a “minimalist compliance standard” and instead asserts a more robust approach to the process of inclusive design.

Part 3. Inclusive Design

Based on the Universal Design Handbook, the approach of inclusive design focuses on the user experience rather than on functionality per se, and on understanding users within the context of their daily lives⁴⁴.

To further explore this concept, I used a case study model presented by the Helen Hamlyn Centre (HHC) in association with the Royal College of Art in London in 2002, which suggests a retail environment designed with the elderly in mind with the aim to eliminate the challenges of shopping and retain a positive social experience through a holistic approach, which combines a smart virtual shopping device guiding shoppers

⁴² Ibid.

⁴³ Ibid.

⁴⁴ F.E Preiser, Wolfgang and H. Smith, Korydon: *[Universal Design Handbook, Second Edition]*, New York, McGraw-Hill Companies, 2011

quickly to the products they are looking for, and through reconfiguring the supermarket layout by dividing it into two areas; a central social hub and retail areas radiating out from the centre of the space⁴⁵.

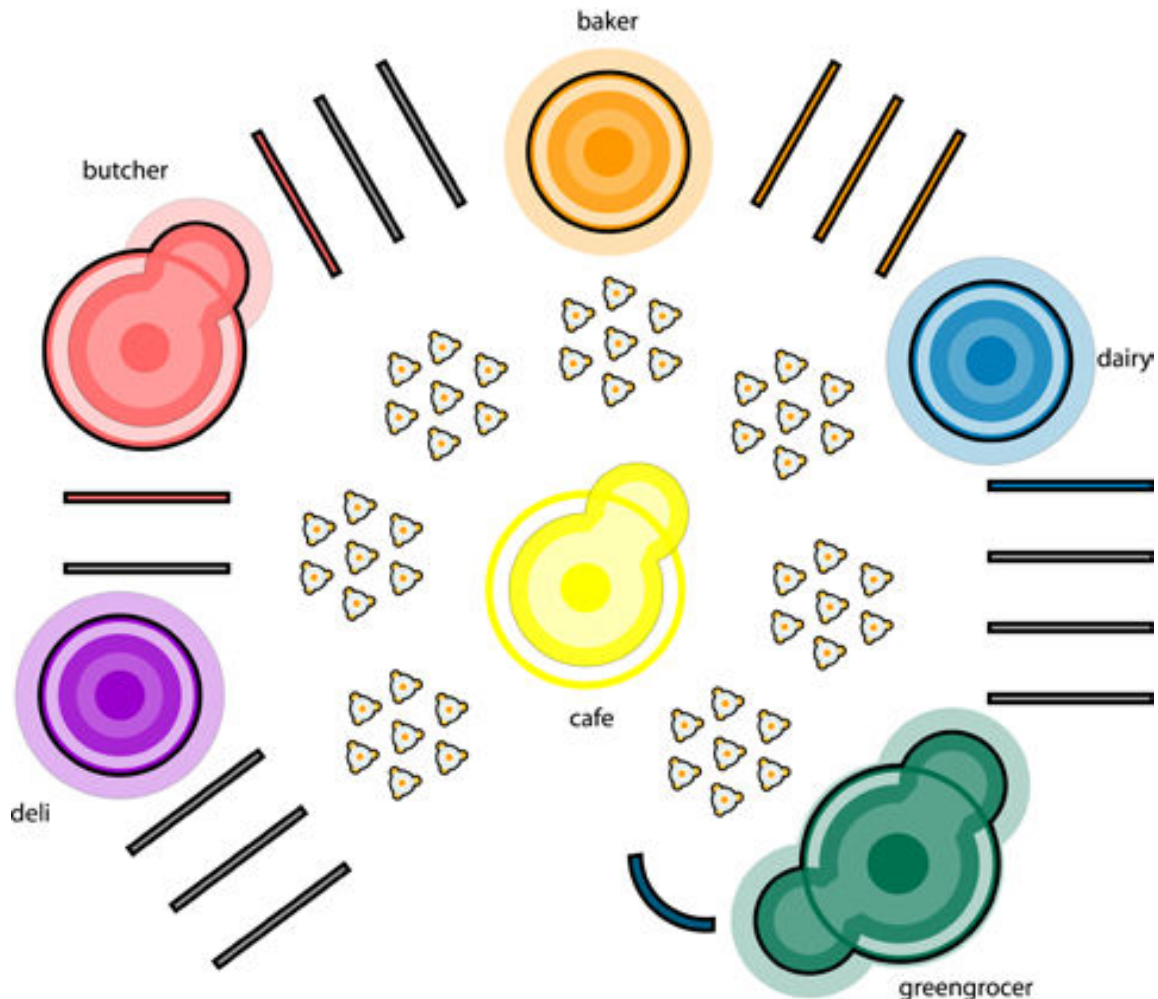


Figure 2.15: Shopsense model, 2002

⁴⁵ Shopsense: a radical re-design of the supermarket shopping experience, extracted from: (<http://www.hhc.rca.ac.uk/research/id/design/id4310.html>)



Figure 2.16: Shopsense model, 2002

Part 4. Urban Scale

At the urban planning level, Universal Design is considered a critical component in the planning of sustainable communities, where the concept of an accessible public realm is at the centre of the social sustainability agenda. The main factors related to accessibility on an urban scale are attributed to:

1. The level of 'walkability'; where pedestrians take precedence over vehicles, therefore streets become a better place for people to walk, play and socialize.
2. The level of 'continuity'; based on the concept of 'travel chain' which aims at creating seamless journeys from people's homes to the city's amenities and transportation facilities via barrier-free pedestrian routes.
3. The level of 'legibility' and clarity of the built environment, which is predicated on ease of navigation and good visibility for all destinations

The factors above can be translated into three of the Universal Design principles of: 'Equitable Use', 'Flexibility in Use', 'Simple and Intuitive Design and Perceptible Information', and can be associated with the concept of liveable communities, a concept that is strongly recommended by the World Health Organization (WHO) as well as the

American Association of Retired Persons (AARP) in the interest of maintaining independence for seniors. The concept of 'liveable communities' or 'sustainable communities' is manifested in the form of an urban model called 'lifestyle centre' or 'town centre', which operates on the two principles of integration of programs and assertion of a pedestrian based urban structure⁴⁶.

The model of 'lifestyle centre' is recently being implemented in suburban developments. According to Philip Langdon's paper "*Creating the Missing Hub*" (2006), lifestyle centres are considered the missing ingredient from the suburb which currently are sites for only living and working⁴⁷.

This idea is characterised by Ben Garven of the New York Times as the latest thing in suburban design and presents Minneapolis-St. Paul as an example where ambitious plans are taking place to create new town centres⁴⁸.

One of the developments in Minneapolis is St. Louis Park in 2003, where planners devised a way to re-examine the notion of a shared surface between cars and pedestrians and create a city centre by reducing traffic impact on city streets with roundabouts and raised pedestrian crossings. The zoning was based on old European village principles where homes and businesses are clustered together and linked with a network of pedestrian paths reducing dependence on cars and on public transit.

⁴⁶ F.E Preiser, Wolfgang and H. Smith, Korydon: [*Universal Design Handbook, Second Edition*], New York, McGraw-Hill Companies, 2011

⁴⁷ Langdon, Philip, [*Creating the Missing Hub, HOW TODAY'S SUBURBS BUILD TOWN CENTERS*], Planning Commissioners Journal/ Number 62/ Spring 2006

⁴⁸ Nasar, Jack and Evans-Cowly, Jenifer: [*Universal Design and Visitability, from accessibility to zoning*], Columbus, Ohio, The John Glenn School of Public Affairs, 2007



Figure 2.17: St. Louis Park development, Minneapolis, 2003

Another example is the City of Lincoln in Nebraska Downtown Master Plan study conducted by Downtown Lincoln Association (DLA), and the City's Urban Development Department (UDD) in 2005, which puts the public realm framework at the heart of redevelopment strategy and focuses specifically on the expansion and improvement of the pedestrian environment through a system of streets, promenades, greenway "park blocks" and open spaces linked with different commercial and retail amenities as a manifestation of the concept of uninterrupted 'connectivity' within the city's residential and commercial zones⁴⁹.

⁴⁹ City of Lincoln in Nebraska Downtown Master Plan, Implementation Program, extracted from: (http://lincoln.ne.gov/city/plan/dt_plan/report/imp.pdf)

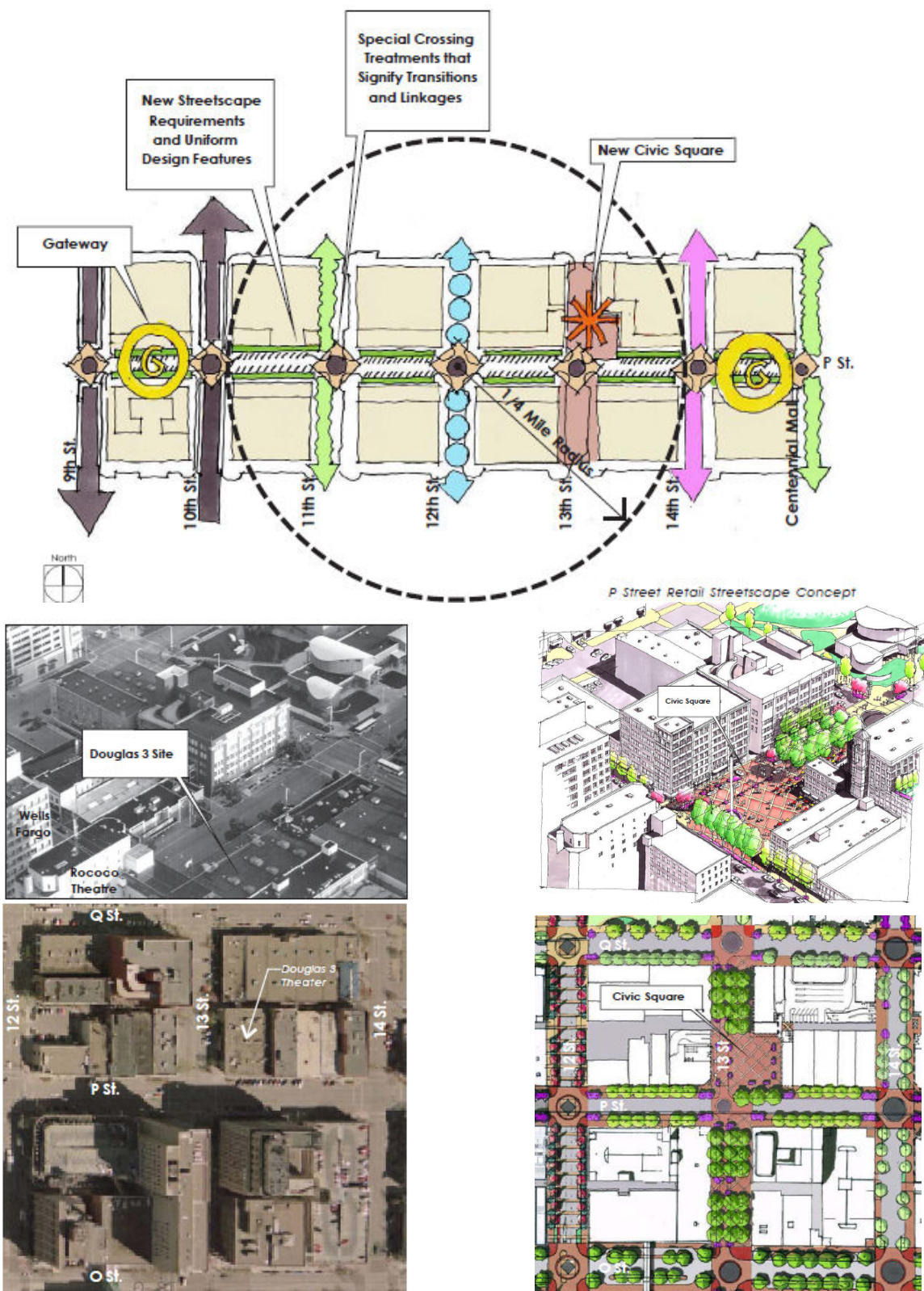


Figure 2.18: City of Lincoln, Downtown Master Plan, Nebraska, 2005

The concept of 'walkability' is achieved here through widened side walks at approximately 16', safety paving to mark pedestrian and bicycle crossings, adequate lighting and variable distribution of kiosks. The concept of 'legibility', however, is achieved with crosswalk treatments that signify transitions and linkages to the public square, promenade and arts corridor; gateways that define a beginning and end to the primary retail core⁵⁰.

The overall layout of the city takes advantage of linear pedestrian walkways as a type of efficient organization which introduces fewer points of decision, different intersections with different art installations serve as reference points and way-finding elements which eases navigation through the city and further enhance the pedestrian experience, the quality and the vibrancy of the city.

Another successful example of a lifestyle centre is CityPlace in West Palm Beach, Florida designed by Elkus Manfredi Architects in 2002. The project is built on a parcel which originally isolated the North and South parts of the city. The proposal was to introduce a linear spine running north-south which linked CityPlace into the existing fabric of the city, creating a new downtown centre as a result.

The planner focused on creating a vibrant pedestrian environment by allocating a civic square at the centre of the main spine of CityPlace to reduce travel distances and serve as a focal point for orientation implementing the concept of 'legibility' and the principle of simple and intuitive design.

The city operates on the principle of integration rather than separation of use, where cultural, commercial and residential programs are integrated in mixed use buildings along a single spine which provides the residents of CityPlace compact and an efficient city living⁵¹.

⁵⁰ Ibid.

⁵¹ Dixon, John Morris: *[Urban Spaces No.2, the Design of Public Places]*, New York, Visual Reference Publication, Inc. , 2001

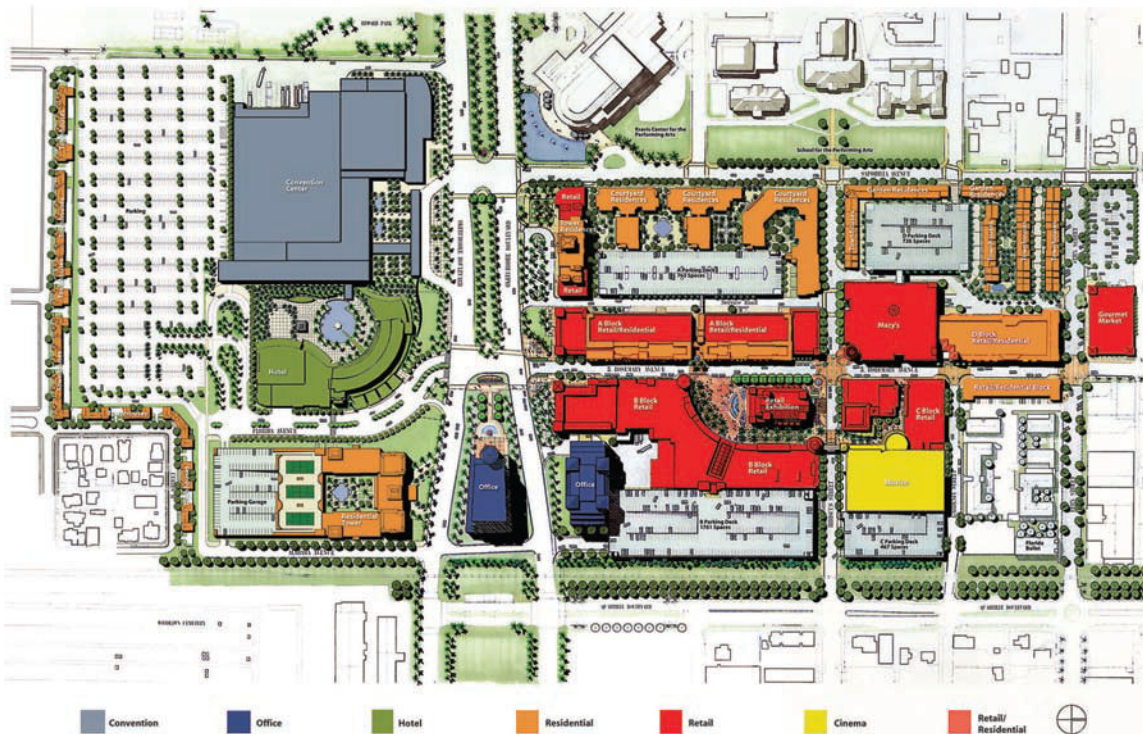


Figure 2.19: CityPlace in West Palm Beach, Florida, 2002

SECTION - IV - GLOBAL AGE-FRIENDLY CITIES: a guide by World Health Organization

Recent initiatives to combine principles of Universal Design with urban planning prompted policy makers around the world to examine how appropriate the shape of the current built environment is for responding to 'the silver wave', and to evaluate its capacity to incorporate a wide range of special needs and set of demands. In addition, it

proposes a guideline for defining the qualities of an 'age-friendly city' and the associated social and physical factors, derived through a series of workshops with an international research group including 1500 elderly person and 750 caregivers and service providers.

"Global Age-Friendly Cities: A Guide" was issued by the World Health Organization in 2007. It defines 'age-friendly city' as "a city that encourages active aging by optimizing opportunities for health, participation and security in order to enhance quality of life as people age. In practical terms, it is a city that adapts its structures and services to be accessible to and inclusive of older people with varying needs and capacities."⁵²

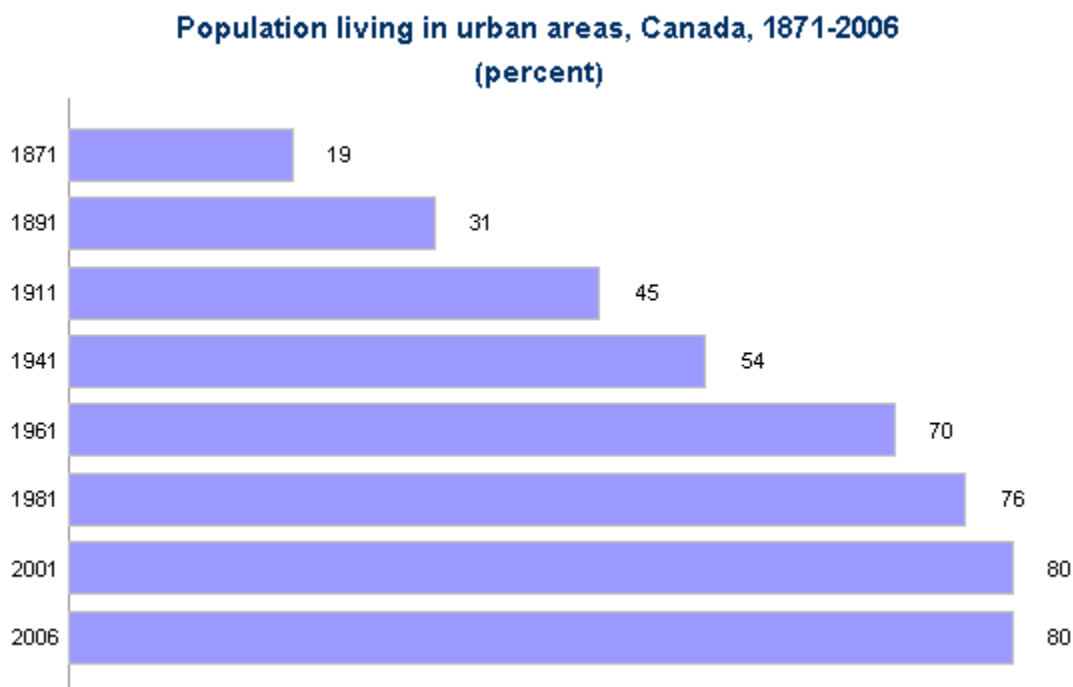


Figure 2.20: Statistics Canada, 2006

A successful age-friendly city is a city which asserts "confident mobility, healthy behaviour, social participation and self determination"⁵³ through its physical characteristics, achieved by a sophisticated level of services coordination under the logic of a 'relational economy' of varying levels of supply and demand associated with demographic fluctuations.

⁵² World Health Organization: *[Global Age-friendly Cities: A Guide]*, France, World Health Organization, 2007

⁵³ Ibid.

I believe this study is highly related to the Canadian context especially considering the fact that the aging population is reaching 20% compared to world average of 11%. And 80% of the total population live in cities, according to Statistics Canada 2006 Census, compared to 50% world average⁵⁴.

The challenge of the aging population is that the elderly are not a homogeneous group, for example, as people get older they become more immobilized which in turn will determine factors related to the individual's lifestyle, and his or her relation with society. In Canada, 36% of people over 65 years old are disabled, and according to Matthias Hollwich, 14% of seniors in the United States lose their driver's license. Therefore, the aim of 'age-friendly' living environments is to help increase the range of functions for the elderly as they become older and more immobile. This challenge holds great economic implications considering that the elderly control approximately 35% of wealth, combined with the baby boomers who control 77% of wealth in Canada, so, their participation in society is important as consumers.

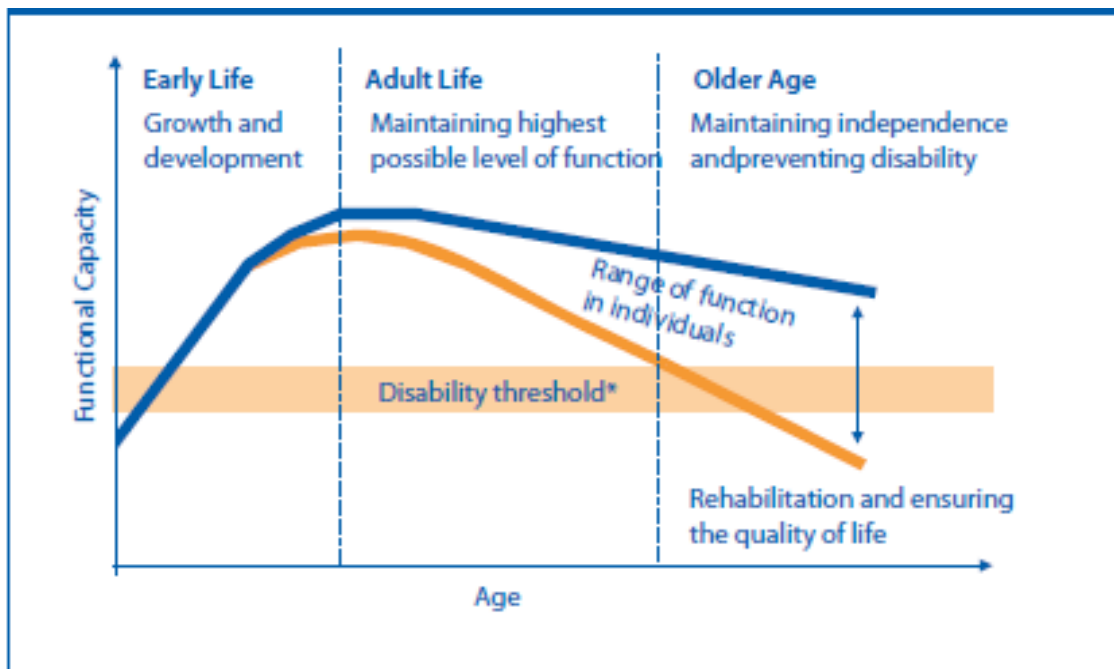


Figure 2.21: Maintaining functional capacity of the life course, WHO, 2007

⁵⁴ Human Resources and Skills Development Canada: [Canadians in Context - Geographic Distribution], extracted from: (<http://www4.hrsdc.gc.ca/.3ndic.1t.4r@-eng.jsp?iid=34>)

Global Age-Friendly Cities guide is mainly driven by the concept of engaging the elderly; it also puts social and civic participation at the centre of its agenda as the keystone of a successful 'age-friendly' environment. Factors predicating the level of civic and social participation in the city include the following;

A. Condition of outdoor spaces and buildings, which influences the concept of aging in place. The 1500 Global Age-Friendly Cities research participants listed the key features for the built environment that need to exist as a condition to achieve the concept of aging in place. These features I summarize here as follows;

1. Pleasant, clean and secure environment; represented in quiet and peaceful natural surroundings such as rivers and beaches. The group also noted that overcrowding is one of the factors that reduces community cohesiveness as a social and as a safety factor.
2. Importance of green space, focusing on the need for small, quiet and contained green areas rather than large busy parks.
3. Availability of a variety of rest areas and adequate public toilets
4. Installation of age-friendly pavement⁵⁵, walkways, safe pedestrian crossings and cycle paths.
5. Availability of age-friendly buildings that are designed according to Universal Design standards. And the inclusion of services which specifically cater to the elderly, such as the provision of a specific cashier's station for the elderly.

B. Housing, where the level of access to community and social services influence the level of independence and quality of life for the elderly and therefore need to be considered in connection with the outdoor spaces and the rest of the built environment. Age-friendly housing is required to be affordable with all essential services available for the elderly earning less than \$20,000 per year who constitute approximately 1/5th of the elderly population in Canada according to 2006 statistics. The design questions need to address adequacy of space, material and adaptability to changing needs as well as

⁵⁵ WHO guideline defines Age-friendly pavement features: as "smooth, level, non-slip surface, sufficient width to accommodate wheel-chairs, dropped curbs that taper off to be level with the road, clearance from obstruction and priority of access for pedestrians".

ease of operation and maintenance over time. Housing design needs to facilitate the concept of aging in place and community integration through creating an accessible living environment.

C. Transportation; the ability to move around the city determines the level of social and civic participation and access to community and services. An age-friendly transportation system, both private and public, is predicated on factors related to infrastructure such as affordability, reliability, safety and comfort, and availability.

D. Community support and health services; one of the major obstacles in this sector is the issue of minimized proximity of services in the city, which renders them inaccessible to the elderly especially the immobilized. To minimize geographical barriers, the guideline recommends to include the idea of co-location or decentralization of services, so they are distributed and available in all neighbourhoods.

The seniors group associated with this study, suggest that efficient distribution of health and social services could also be facilitated through wellness centres, which I believe will serve as a dual purpose for different age groups elderly and young simultaneously.

In addition to the built-environment physical features, other feature supporting a high level of civic and social participation are: good health and well-being dictated by self-esteem and supportive and caring relationships, which implies social inclusion built on intergenerational and family interaction; and providing the elderly the opportunity to share their knowledge and expertise with other generations. This factor inspired some of the new long-term care housing models listed in the previous section, and I believe is a highly important tool in breaking the mould surrounding the elderly by the conventional institutional care model, which technically stores seniors away from the public scene.

SECTION - V - CONCLUSION

The social agenda established in this section aims at providing for the basic human needs generated during the journey of aging. Addressing these needs requires a reinvented programmatic strategy based on the concepts of establishing autonomy and social continuity for the elderly.

The programmatic strategies highlighted in this chapter are implemented by means of two main models: institutional and non-institutional. Both models are able to address a wide spectrum of human needs including the physiological and the psychological through a number of strategies focused on engaging the natural environment, maintaining an active lifestyle and promoting safety and accessibility. However, the specialized environment or the institutional model proved to be limited to the condition of the internal environment and the local specificity of the institution itself and is perceived as a means of segregation rather than integration of age groups. In addition to the social qualities mentioned above, the institutional model is also considered unsustainable in the context of a large increase in the aging population and escalating cost of healthcare and government spending.

Therefore, the intention behind the abandonment of the institutional model in Denmark and the associated trend of deinstitutionalization in Europe has been to “secure continuity in the life course, so that lifelong external support systems as well as autonomy are preserved to ensure self-determination for dependent (older) people. In addition, the negative stereotyping that comes from being labelled a patient is avoided”⁵⁶.

The rejection of the institutional model or the specialized environment in Denmark has also aimed to establish efficiency in the realm of health care where facilities and staff

⁵⁶ Interlinks, extracted from:
(<http://interlinks.euro.centre.org/model/example/SocialHousingForOlderPeopleInTheActOnSocialHousing>)

are distributed in an accessible manner to all people and age groups⁵⁷.

Integration between the social and the urban fabrics on the levels of amenities, services and age groups introduce an environment of 'continuity' which facilitates accessibility, an active lifestyle and social participation and goes beyond the response to the physiological needs of the elderly to achieve 'self-actualization' and 'self esteem'. The concepts of integration and rejection of the specialized environment provide the bases for a proposal that establishes a dialogue between the pragmatics of the built environment and the idealism of social continuity, with the capacity to combine the physical, the cultural and the social in a single realm.

⁵⁷ Mary Stuart and Eigil Boll Hansen: [*Danish Home Care Policy and the Family: Implications for the United States*], 2006. Journal of Aging & Social Policy. 18(3/4): 27-42. Extracted from: (<http://books.google.ca/books>)

CHAPTER 3 - THE ARCHITECTURAL AGENDA - IN PURSUIT OF CONTINUITY

In the last century, modernism produced placeless objects and standalone monuments to industry where architecture was predicated on the figural and the symbolic content rather than the contextual and the urban component.

Over the past twenty years, a call for the architectural agenda to establish a rapport with the urban agenda manifested itself through different design methodologies. This chapter provides a synthesis of those methodologies, and explores the evolution of the architectural form influenced by connecting architecture to urbanism, through a discourse which combines theoretical proposals and architectural examples.

SECTION - I - INTRODUCTION

In the process of developing the city under the logic of industrial organization, architecture lost its rapport with the human scale and fell under the spell of mass production, generating rigid typologies impossible to reform or answer to transformations of society and technology. The framework of city planning guided the production of architectural form where the Cartesian grid was the principal system of organization at the macro level which then gradually reflected itself on the micro level both externally and internally⁵⁸.

Although the grid as a framework is considered a rational tool for organizing different elements in an orderly fashion, the direct and uncritical application of this formal strategy on different physical, cultural and social contexts resulted in a rigid formal strategy and a geometric order creating an artificial arrangement of space. Greg Lynn argues that Cartesianism became “associated with the isolation and reduction of systems to their

⁵⁸ Lynn, Greg: *[Architectural Curvilinear, the Folded, the Plait and the Supple]*, A.D. Architecture Design Vol 63 3/4, March/April 1993

constitutive identities;⁵⁹ in my mind, it is also associated with the reduction of continuity between form and context.

This rigidity of the urban system gave birth to deconstructivism in the late 1980s, which is based on rejecting Cartesianism as the only tool of formal conception based on the combination of dissimilar elements through discontinuous formal strategies as a manifestation and internalization of differences and inconsistencies between physical, social and cultural contexts through formal conflicts for the purpose of providing an architectural form of a higher level of sophistication. This level of sophistication is derived from the search for complexities and contradictions hidden by the hyper-logical order of construction. Deconstructivism therefore, became an antithesis to Cartesianism and a representation of difference.

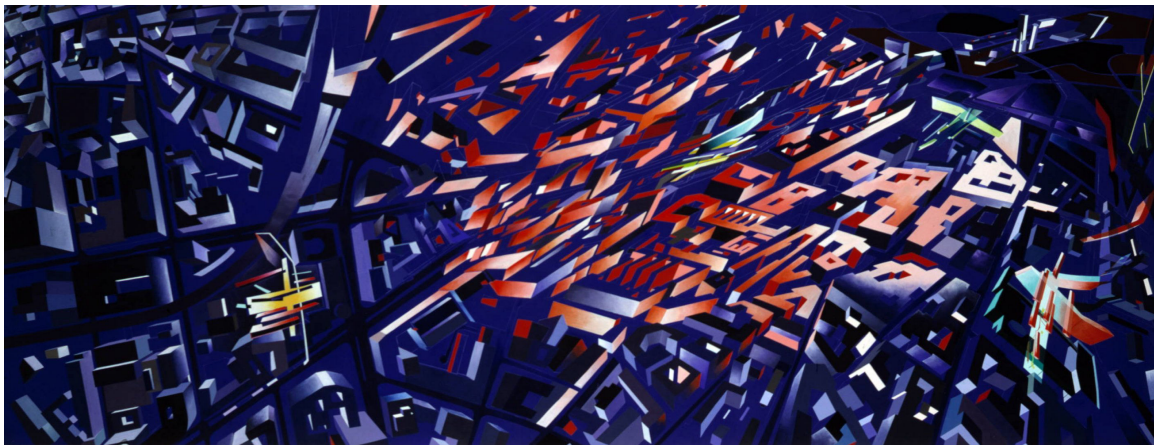


Figure 3.1: Zaha Hadid, Victoria City Aerial, Berlin, Germany, 1988

At the end of the 20th century, a number of models calling for architectural projects to integrate with urbanism such as ‘landscape urbanism’, ‘architectural urbanism’ and ‘infrastructural urbanism’ emerged to promote design as a primary tool for conceiving the built environment. This meant a reconsideration of the boundaries of the architectural field including the conventional concepts used to create architectural form, and restoration of the critical role of architecture, which meant a revision to the approach of creative strategies to a level matching the complexity of emerging new programs, urban dynamics and infrastructure.

⁵⁹ Ibid.

This challenge provided architectural thinkers such as Peter Eisenman an opportunity to devise a new formal proposal and a framework to incorporate urbanism into architecture and address the complexities of the urban environment. Eisenman discovered in the methodology of deconstruction, starting with the unearthing of original / historic contextual meanings, an opportunity to establish a rapport and a sense of continuity within the built environment rather than contradiction, and provoked a reaction calling for unity, which begins within architectural linguistics and its reconstruction on the basis of historical analysis, followed by unity between architecture and urban fabric through identifying consistencies⁶⁰ - which originates from cultural and contextual conditions -, creating an environment where “the sensed, the seen and the structured share the same continuum”⁶¹.

This reaction manifested itself as a design methodology, over the past two decades, in three different evolutions - which I was able to define and synthesise in this research using different sources on the subject of continuity between urbanism and the architectural form - which are: ‘superimposition’, ‘smoothness’ and ‘fusion’, defined as follows:

1. ‘Superimposition’: redefining ‘ground’ as an apparatus - or a design tool - to connect form with context. ‘Superimposition’⁶² as a design methodology implies overlaying a number of different organization systems and hierarchies to compose a single layer.
2. ‘Smoothness’: redefining both ‘ground’ and ‘vertical surface’ as apparatuses to connect form with context. ‘Smoothness’ as a design methodology implies a gradual and a gradient transition between surfaces of different orientations.
3. ‘Fusion’: synthesizing ‘ground’, ‘vertical surface’, ‘program’ and ‘systems’ as apparatuses to connect form with context. As a design methodology, it implies the

⁶⁰ Balfour, Alan: [*Cities of Artificial Excavation* The Work of Peter Eisenman 1978-1988] New York, Rizzoli International, 1994

⁶¹ Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

⁶² This design methodology was also referred to by Eisenman as ‘palimpsest’ in his earlier work, which was associated with symbolic interpretations of the contextual condition. However, superimposition implies a geometric composition rather than figural.

inclusion of the system as an architectural component.

The following section provides a description of the three evolutions supported with architectural precedents and a critique of each methodology and its effectiveness.

SECTION - II - DESIGN METHODOLOGIES

Part 1. 'Superimposition': 'ground' as a 'design surface'

The first step involved redefining the concept of 'ground' as a 'design surface' part of the architectural form.

According to Alex Wall, 'ground' "no longer refers to prospects of pastoral innocence but rather invokes a functioning matrix of connective tissue that organizes not only objects and spaces but also the dynamic processes and events that move through them"⁶³. It also engages with aspects of instrumentality of site as an architectural element incorporating active engagement with the public realm.

One of the early examples which addressed the concept of 'ground' as a 'design surface' is Office for Metropolitan Architecture's (OMA) master plan for the Parc de la Villette proposal in Paris in 1982. This concept served as a tool for Rem Koolhaas to find an organizational pattern of disparate social activities on a vacant field. The process involved the superimposition of functions in a form of horizontal strips of different character. The anticipated result is the construction of a collective urban structural system with maximum connection between its different elements - strips - able to generate a process of "a chain reaction of new, unprecedented events."⁶⁴

This project is a study in the redefinition of boundaries for the purpose of exposing certain object(s) and their relationship to other objects where boundaries become part of

⁶³ Wall, Alex, [*Programming the Urban Surface*], edited by Corner, James: [Recovering Landscape: Essays in Contemporary Landscape Theory] New York, Princeton Architectural Press, 1999

⁶⁴ Koolhaas, Rem and Mau, Mau, [*Congestion without Matter*], S,M,L,XL, edited by, Sigler, Jennifer, New York, The Monacelli Press, 1998

the field and a tool for perception, which creates a relationship between context and user, and creates a level of continuity between perception and action forging an architectural response to the question of variation of program and “openness of action”⁶⁵. This architecture is described by Spuybroek as “the architecture of the free...one that absorbs openness and void” through moving from “a geometry of fixed points to one of open points, where points are part of the line...points that can contract and expand, and that build relationships with other lines into a coherent flexible system.”⁶⁶

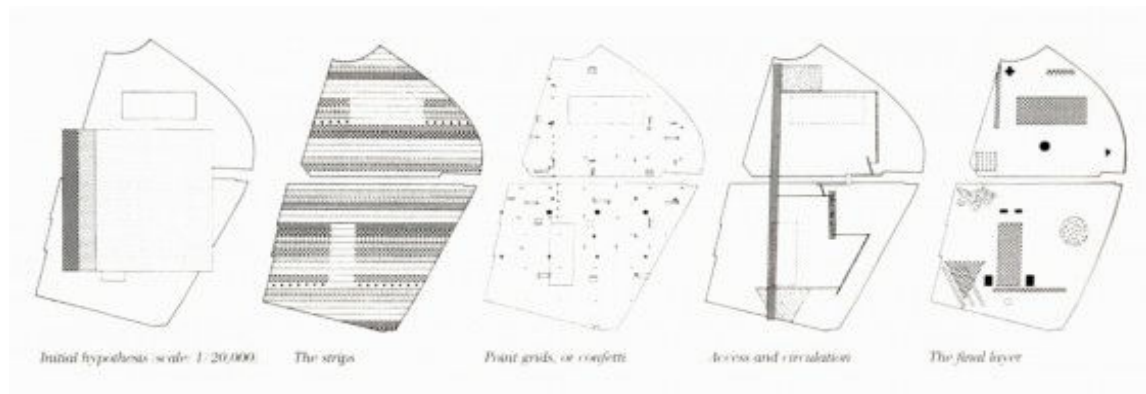


Figure 3.2: OMA Parc de la Villette, France, Paris, 1982

Eisenman’s early work represented a shift in the conceptual framework of architectural form, from creating form for the sake of form to creating form for the sake of establishing relationships. His thinking was oriented towards the ‘how’ rather than the ‘what’ and his attention focused on the tools rather than the meanings.

The Wexner Centre for Visual Art project of 1983 provided Eisenman with the discovery of the concept of superimposition as an idea for implementation of architectural and urban connections rather than deconstructivist expressions⁶⁷.

The Ohio State University campus was built in the nineteenth century on a grid deliberately shifted by twelve-and-one-quarter degrees off the grid of the City of

⁶⁵ Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

⁶⁶ Ibid.

⁶⁷ Davidson, Cynthia: [*Tracing Eisenman*, Peter Eisenman Complete Works] New York, Rizzoli International, 2006

Columbus as a sign of independence. As a result, the campus facilities located on the periphery of the campus became disconnected from the city in order to conform with the campus grid. The two different orientations of both city and campus grids inspired Eisenman to integrate and superimpose one grid on another, using the city grid as the generator for the axis of entry and circulation cutting through the main centre of the campus and establishing a rapport between the two. The superimposition of the grid in this project dissolved the identity of the existing urban condition of disconnection and reconstructed an identity which has its physical properties and context in coherence.



Figure 3.3: Peter Eisenman, The Wexner Centre for Visual Art, City of Columbus, Ohio, 1983

For Eisenman, this project evoked a design strategy which helped expunge the autonomous certainty of the grid both as a design surface as well as a figural element of infrastructure resulting in a sense of continuity between movement and infrastructure establishing a meaning for movement as a tool for informing contextual transformation and imposing a new local condition within a single continuum.

To develop a surface-based design strategy, Eisenman searched for a more experimental approach based on principles of juxtaposition and chance, and discovered François Morellet's work (Figure 3.4) as a tool to achieve superimposition on an *a priori* basis, prompting accidents, randomness and improvisation in the process for event

creation purging all personal expressionism through a neutral and unauthorial manner⁶⁸.

Eisenman argues that the figural content that might be produced is a by-product of the design process rather than the author⁶⁹.

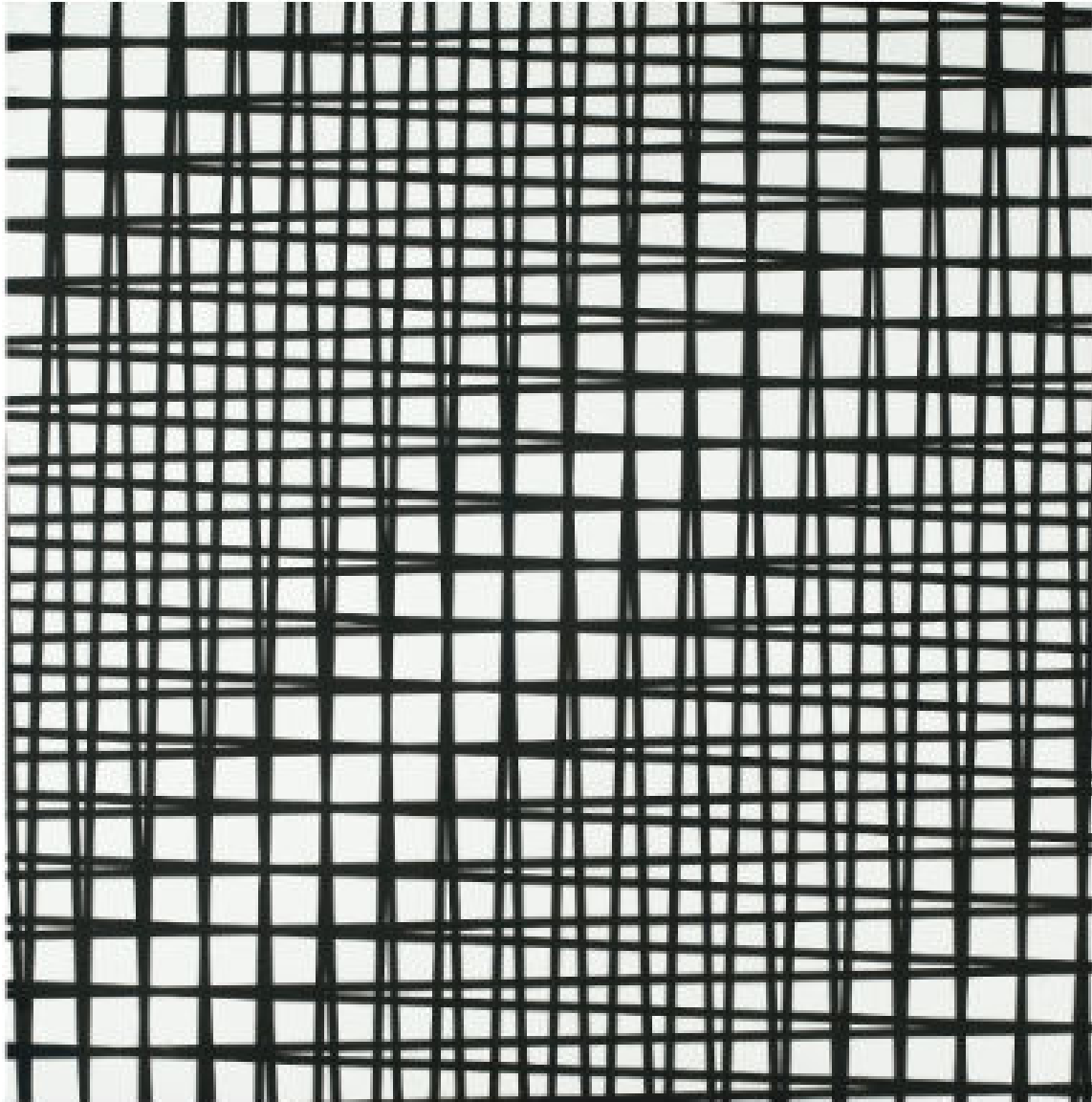


Figure 3.4: François Morellet, Superposition-de-2-Trames-de-Carres

The concept of superimposition further evolved to incorporate an array of layers

⁶⁸ Balfour, Alan: [*Cities of Artificial Excavation The Work of Peter Eisenman 1978-1988*] New York, Rizzoli International, 1994

⁶⁹ Ibid.

concerned with 'ground', and expanded the notion of the grid to involve historical content of the site, the scale and geometry of the context as well as the figural quality of the intended program.

The Greater Columbus Convention Centre project of 1990 is a good example to describe the methodology used, and assess its effectiveness from both an architectural and an urban point of view.

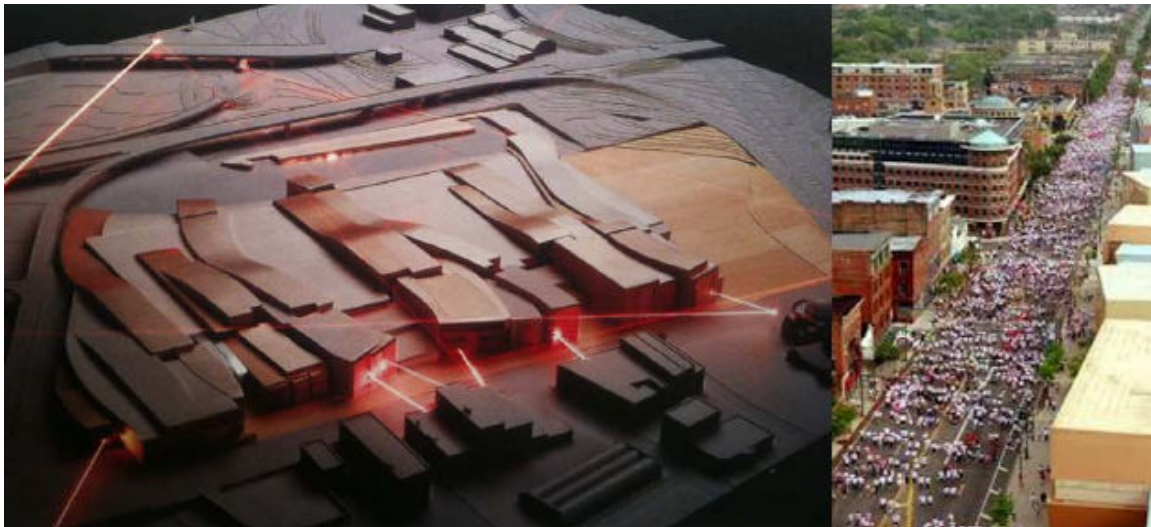


Figure 3.5: Peter Eisenman, The Greater Columbus Convention Centre, Columbus, Ohio, 1990

The project is located in Columbus, Ohio on an old rail yard site, characterised by its continuous variation of urban fragments and urban conditions, where it is surrounded by highway ribbons and a combination of low-rise and mid-rise mixed-use structures.

Eisenman's approach aimed to establish continuity with the urban setting by mirroring its scale and its organizational pattern, and to build figural connections with the rail yards by using a series of linear forms mimicking the linearity of the trains, curved in a way that extends and offsets the curvature of the adjacent highway ribbons⁷⁰.

These formal procedures were then overlaid by a figural layer representing the dynamics of the vital city in the form of a grid of fibre optic cables. For Eisenman,

⁷⁰ Davidson, Cynthia: [*Tracing Eisenman*, Peter Eisenman Complete Works] New York, Rizzoli International, 2006

information is interpreted as a means to give “organization to the complexity of our times, and free ourselves from the constraints of conventional and mechanical forms culturally and architecturally.”⁷¹

I believe that Eisenman was successful in establishing a connection on the level of scale with the existing contextual conditions, and in annulling the formal model of a certain typology into a combination of fragments rather than one homogeneous box.

Alan Balfour notes that Eisenman’s work “seeks to undermine the conventions of architectural formulation without reference to external cause, but wholly through critical manipulation of figural content”⁷². In support of this statement, Colin Rowe argues that the figural content is “only a fragment of something that could exist.

For Eisenman, superimposition is a simultaneous existence of two or three formal and historical layers to produce another condition which was totally artificial.”⁷³ I agree to some extent with Balfour’s position, specifically the notion where the external massing of the building displaces the relation with the internal program, which makes the product to some degree an artificial composition of forms, but I think that the relationship between the subject and the narrative has no concern with the performance of the physical characteristics of the building internally. Rather, it only searches for the external circumstances of the adjacent multi-scale objects, for pattern of order unique to the site in hand.

So, the process of multi-layered superimposition, I believe, is a successful endeavour in transforming ‘ground’ as a ‘design surface’, as well as in revealing analogous connections between program and ‘ground’ that were previously obscured, and on another level this process functions as a tool for creating formal variation through establishing temporal continuity with the site’s specificities. It also succeeded in prompting new typologies that work with certain contextual conditions.

⁷¹ Ibid.

⁷² Balfour, Alan: [*Cities of Artificial Excavation* The Work of Peter Eisenman 1978-1988] New York, Rizzoli International, 1994

⁷³ Ibid.

Part 2. 'Smoothness': 'ground' and 'vertical surface' as apparatuses to connect form with context.

The process of multi-layered superimposition triggered the examination of the vertical surface as a seamless extension of the ground surface, and redefined this combination as a tool to connect with the urban condition. Alex Wall, in *Programming the Urban Surface* defines 'smoothness' as a surface treatment instrument where "the surface becomes a staging ground for the unfolding of future events. The surface is not merely the venue for formal experiments but the agent for evolving new forms of social life."⁷⁴

'Smoothness' as a term entered the avant-garde architectural discourse in the early 1990s⁷⁵, and was derived from Gilles Deleuze and Félix Guattari's distinction of smooth vs. striated space, which they define as the "Gradient territoriality structured via continuous differentiation of field qualities articulating in-between transitions rather than hard segmented ordering of types."⁷⁶

This process prompted a language of surfaces and spatial plasticity, continuously changing to integrate disparate urban and architectural elements in relation to each other. The term 'smoothness' could appropriately resemble connotations associated with the gradual formal transition and link between both vertical and horizontal surfaces.

This language is classified under different terminologies for different architects and theoreticians such as Deleuze, Mark Wigley and Alex Wall. Terminologies including the 'Fold', the 'Smooth', the 'Supple' and the 'Pliant' fall under one category, which I think Greg Lynn was successfully able to bring under one term that is 'architectural curvilinearity'⁷⁷. The term 'smoothness' is a reference to the process of active involvement of the curvilinear surface language with the external elements in a gradual

⁷⁴ Wall, Alex, [*Programming the Urban Surface*], edited by Corner, James: [*Recovering Landscape: Essays in Contemporary Landscape Theory*] New York, Princeton Architectural Press, 1999

⁷⁵ Schumacher, Patrik, [*The Autopoiesis of Architecture: A New Framework for Architecture*], London, John Wiley & Sons. Ltd. 2011

⁷⁶ Deleuze, Gilles : [*The Fold, Leibniz and the Baroque*] London, The Athlone Press, 1993

⁷⁷ Lynn, Greg: [*Architectural Curvilinearity, the Folded, the Pliant and the Supple*], A.D. Architecture Design Vol 63 3/4, March/April 1993

and hierarchical manner in order to establish continuity and connection. This concept of continuity is articulated by Spuybroek through the idea of continuity of surfaces; the surface of action - ground - and the surface of perception - cladding -⁷⁸.

This process, unlike superimposition, brings a highly sophisticated level of synthesis, proportion and resolution in a clear and direct manner which completely dissolves the figural association and asserts a formal one. The evolution of 'smoothness' as a methodology throughout its development since the mid 1990s was driven by the degree of cohesion and transition between the ground and vertical surfaces and context, and the more cohesive the link the more fluid the transition becomes.

The following examples provide an array of projects illustrating the recent evolution of 'smoothness', which according to Greg Lynn, shifted the surface language from the "tectonic paradigm" to the "plastic paradigm" producing pure and seamless formal expressions⁷⁹.

Greg Lynn's Kleiburg housing project in Bijlmermeer, Netherlands of 2006 is one of the projects that utilizes the vertical surface as an urban component due to the nature of the given program⁸⁰. Kleiburg is an existing social housing project built by architect Frans Ottenhof in 1973; the building is characterized by its 1km long slab.

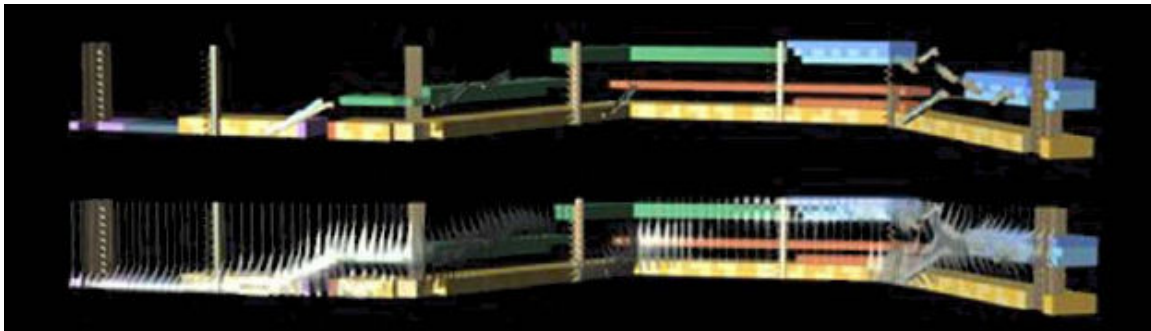


Figure 3.6: Greg Lynn, Kleiburg housing project, Bijlmermeer, Netherlands, 2006

⁷⁸ Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

⁷⁹ Lynn, Greg, lecture: [*How calculus is changing architecture*], extracted from: (<http://www.youtube.com/watch?v=DeyzUysMLy0>)

⁸⁰ Ibid.

The large size and the high density of the project inspired Lynn to redefine the project as an urban parcel and reconfigure the internal organization and circulation to establish an affiliation with the external access points by making the vertical surface the organizational element of systems and assemblies. Lynn, also established a logic of hierarchy, interactivity and density of connections by 'smoothing' different elements. 'Smoothness' to Lynn means the integration of façade, circulation system and program within a continuous tectonic system.

Mark Wigley approaches the concept of 'smoothness' from an organizational point of view rather than a tectonic one. He considers the existence of an event as an essential requirement to achieve 'smoothness' and defines it as a hierarchical order which links context and program through an event⁸¹. This idea can be articulated in terms of experiencing continuity, which becomes a form of user involvement with the structure through a loop of perception and action connecting the seen with the structured in one continuum. I believe that Lynn was successful in suppressing the complexity of the given program and in sustaining connection with contradictory elements through flexibility of local connections from both point of view; the tectonic and the organizational.

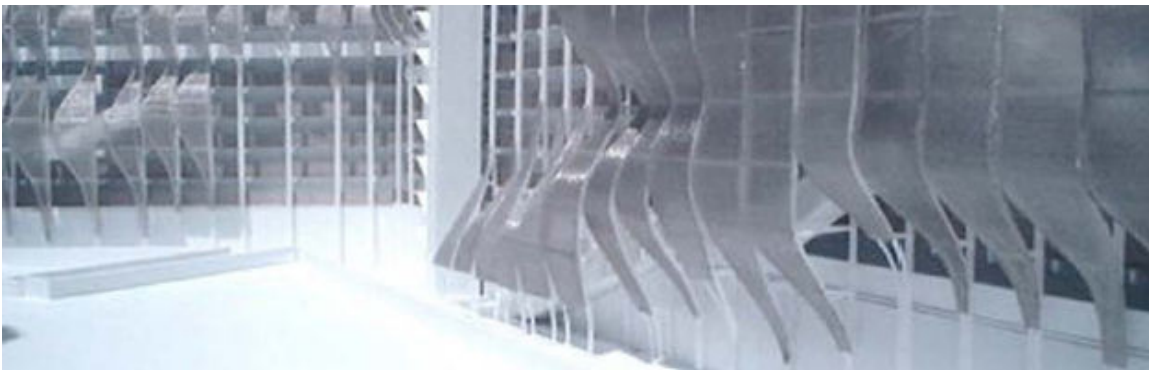


Figure 3.7: Greg Lynn, Kleiburg housing project, Bijlmermeer, Netherlands, 2006

The level of synthesis, proportion and resolution offered by the concept of "smoothness" is manifested by the multipurpose function of the concept as a tool of both formal expression and programmatic organization highly legible to the user in its forging of connectivity between architecture and urbanism. In the Szervita Square project in

⁸¹ Lynn, Greg: *[Architectural Curvilinear, the Folded, the Plait and the Supple]*, A.D. Architecture Design Vol 63 3/4, March/April 1993

Budapest proposed in 2006, Zaha Hadid offers a great example of folding free architectural and urban elements together under one surface language, a tactic which assumes a high degree of synthesis between disparate materials, functions and programs while maintaining their individual purpose and identity.



Figure 3.8: Zaha Hadid, Szervita Square project, Budapest, 2006

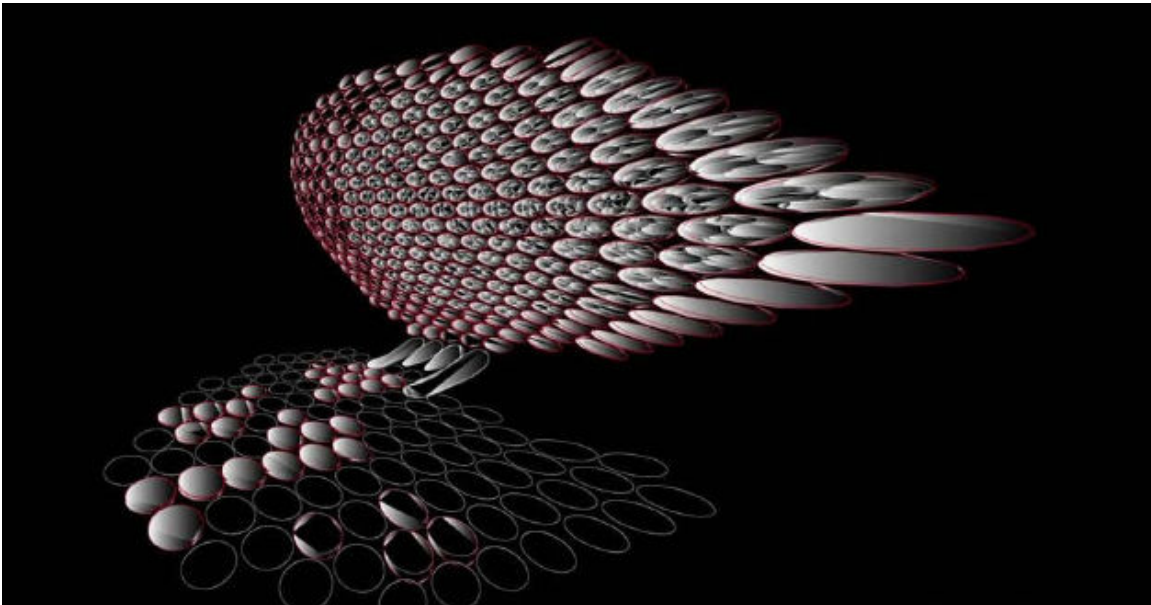


Figure 3.9: Zaha Hadid, Szervita Square project, Budapest, 2006

Hadid's plans for both the building and the square to connect seamlessly to the surrounding network of squares and public places creates a public zone that is porous and open. Her approach consists of formally blending the horizontal plane of the square with the vertical volume of the building in a 'smooth' and seamless manner creating a volume which gradually emerges from the ground, and adding a layer of pattern which discreetly incorporates the south façade's *brise-soliel* and the square's street furniture.

The pattern used is variable in its scale through deformation creating continuous morphological development suitable for each local condition. This tactic is reminiscent of D'Arcy Thompson's deformation art work, which I believe is a good way to articulate different densities and depths of the shading devices required depending on solar exposure and the different elements and sizes programmed for the square's street furniture.

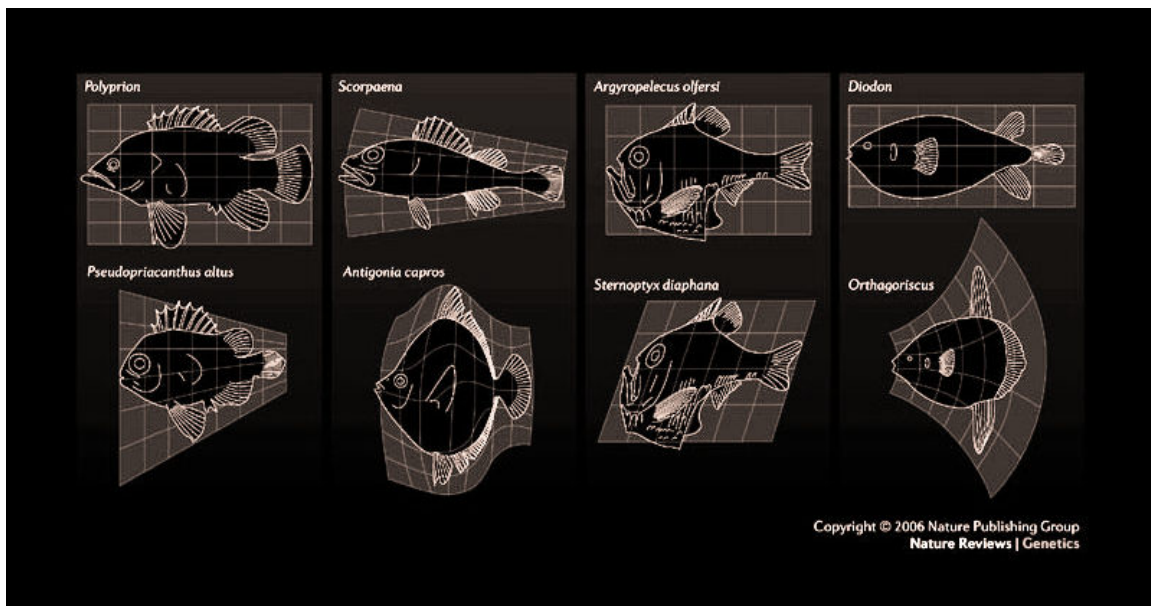


Figure 3.10: D'Arcy Thompson's deformation art work

Hadid was able to reconstruct a continuous architectural language through the identification of local conditions and programs in a gradual manner to a level which creates a single new entity with its figural substance and is able to place the concept of continuity at its centre. My argument here reflects, to a degree, Lars Spuybroek's position on 'smoothness' and continuity in architecture. In his book *The Architecture of Variation*, Spuybroek suggests that it is not the edges between the elements that are

important but rather 'the middle' of the elements that become the most important principle of architectural order⁸². Which means that the square and the facade are no longer edges as such, instead, they become a new single element in the built environment able to address different requirements and become a product of relationships placing the concept of continuity in the realm of "controlled variation"⁸³ releasing the tension between various urban and architectural elements.

From material assembly and expression, both Hadid and Lynn followed the 'tectonic paradigm' in the two projects described above, which allowed for different layers of material to be expressed on one surface. In a lecture of Oct. 10, 2009, at the Future of Design conference, Lynn linked the 'tectonic paradigm' of 'smooth' architecture to baroque architecture not only in terms of its curvature but also in terms of integrating all façade elements under one surface language⁸⁴. This link is fascinating to me especially when my research revealed that Szervita Square is surrounded by the most important baroque buildings in Budapest. I didn't find evidence proving Hadid's intention to link with the baroque context, but I think that her choice of methodology complements the context of the project and touches on the concept of temporal continuity from the point of view of architectural composition.

The previous examples presented the 'tectonic paradigm' of 'smoothness' which is expressed through layering of different materials over one continuous surface. However, technological advances in building materials allow for a more minimal expression for 'smoothness' to be created, which Lynn refers to as the 'plastic paradigm'.

A great and also an extreme example is Ben van Berkel's Burnham pavilion in Millennium Square in Chicago, built in 2009 to commemorate the 100th anniversary of Daniel Burnham's 1909 Plan for Chicago. The pavilion is a representation of an idea on how the city could develop itself, a concept related to Daniel Hudson Burnham, planner of central Chicago. Berkel suggests that the city needs to be conceptualized as a totality

⁸² Spuybroek, Lars, [*The Architecture of Variation*], Rotterdam, Nai Publishers, 2009

⁸³ Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

⁸⁴ Lynn, Greg, lecture: [*How calculus is changing architecture*], extracted from: (<http://www.youtube.com/watch?v=DeyzUysMLy0>)

with all its elements - the physical, cultural, social and economic - in mind⁸⁵. This concept is expressed in a plastic manner where the purification of disparate elements blend under one pure volume, mixing horizontal and vertical planes combined with structure in one expression. At the same time it addresses the city's infrastructural qualities through spatial configurations mimicking Burnham's concept of breaking the Cartesian grid of Chicago with diagonal vistas emerging from its centre, and takes it one step further which addresses three dimensional vistas as a new urban planning principle.

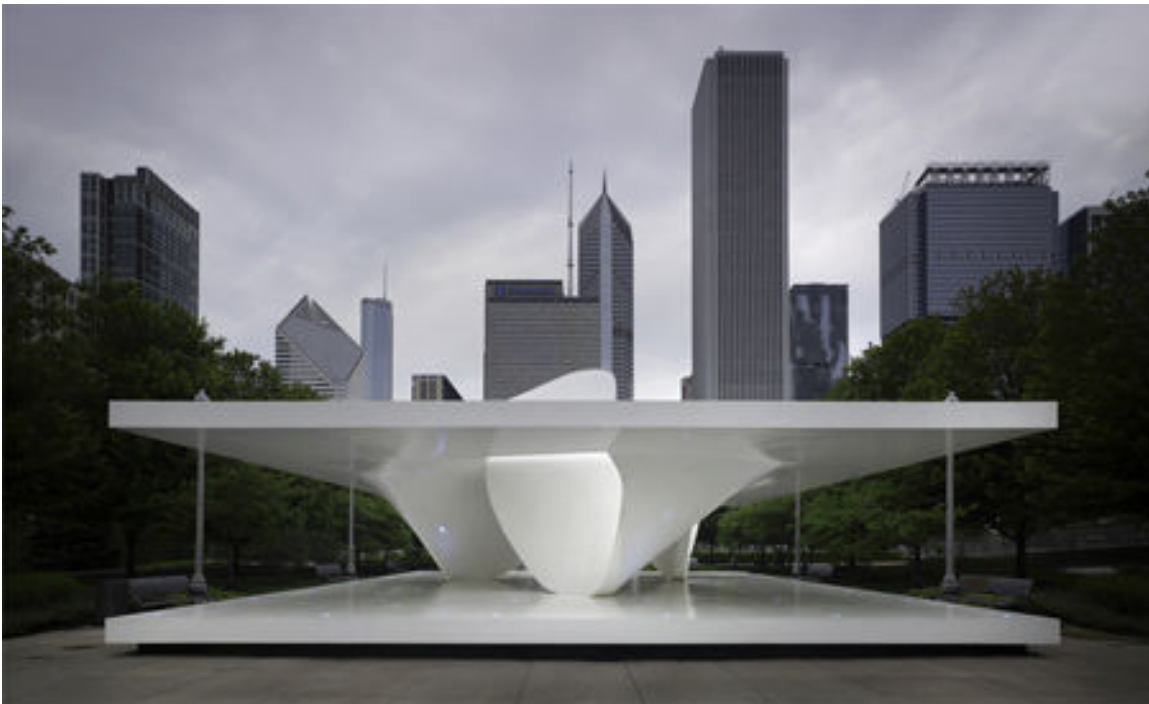


Figure 3.11: UNStudio, Burnham pavilion, Millennium Square, Chicago, 2009

UNStudio was keen to eliminate the façade in its conventional sense, instead it is internalized and reconfigured in a way which makes it operate as an inviting infrastructural public element and as a temporal gesture which dissolves within the autonomy of the overall structure. Ben van Berkel was able to facilitate both horizontal and vertical surfaces as one element gradually composed and formulated and as an apparatus which sincerely links architecture and urbanism at many levels.

⁸⁵ UNStudio, interview, extracted from: (<http://www.unstudio.com/media/interviews/5188-interview-ben-van-berkel-18>)

The Burnham pavilion puts Stan Davis's definition of 'smoothness' in context, where he defines it as "an organizational trope similar to 'matrix', 'loosely coupled networks' and 'blur'," a concept which Davis and his colleague Christopher Meyer believe is applicable to an urban agenda of connectivity and transformation.

The methodology of 'smoothness', based on the qualities of tectonic manifestation of precedents presented above, is able to address the architectural agenda in establishing continuity and coherence with urbanity. But the physical or the formal agenda is heavily present and visible in a way which might overshadow and dismiss the social agenda. Therefore, I thought that my research for this thesis needed to include formal strategies that are in line with the concept of continuity between architecture and urbanism, and further explore the concept of 'blurring' of 'networks' and 'matrixes' which Davis and Meyer alluded to in their book *Blur - The Speed of Change in the Connected Economy*, so I refer to Stan Allen's argument, in his article "From Object to Field" which states: "the problem of the architect working in the city is his lack of devices. The conventional notion of architecture that is merely dedicated to the idea of control, hierarchy and unity no longer provides sufficient tools to understand the complex interplay of uncertainty and order in the city"⁸⁶. This statement is not an annulment of 'smoothness' but a suggestion for an evolution of the concept to an extreme where all urban and infrastructural elements are reflected in an architectural language.

Part 3. 'Fusion': synthesizing 'ground', 'vertical surface', 'program' and 'systems' as apparatuses to connect form with context.

The concept of 'fusion' was developed in parallel with 'smoothness' as a design methodology which expanded beyond the horizontal and vertical surfaces as design elements and tools and synthesized them with the notion of the 'urban condition' - the combination of services, information technology networks, matrices and infrastructural systems - as an apparatus for conceiving the architectural form.

⁸⁶ Allen, Stan: [*From object to field*], AD Profile 127 (Architecture after Geometry) Architectural Design vol.67 no.5/6 May/June 1997 / p.24-31

The key question in this discourse is, how would the architectural form evolve in the event of redefining non-architectural tools as architectural and as design elements? In his book *Weak and Diffuse Modernity* Andrea Branzi tries to answer this question by imagining “an architecture that becomes an urban semiosphere surpassing its contrasting limits and becoming producer of immaterial qualities that change over time”⁸⁷. During this research, I also tried to imagine this type of architecture and compose a list of qualities driven by Branzi’s statement and analyse it through precedents listed in this section. I found that from a design methodology point of view, there are three main assumptions guiding this process:

1. Assertion of the local ‘urban condition’ as an antithesis to the figural content, which means the definition of the most critical local system as the subject matter.
2. Dissolution of the figure and the dismissal of the symbolic metaphor based on logics of representation and interpretation.
3. Implementation of the logic of ‘relational economy’ predicated on the variation of the levels of supply and demand, and translated architecturally as the inherent principles of flexibility and adaptability.

From the above assumption, I derived a definition of ‘fusion’ as a design methodology based synthesis of relationships between systems as the nuclei for space production catering to a certain subjectivity or need, and instigating a process of discovery for new connections that might not have existed before.

Fusion as a methodology suggests a containment of urban systems including the structural systems of urbanism such as ‘nodes’, ‘borders’ and ‘linkages’ into one instrumental model. The model’s ability to work with different systems reflects a quality of flexibility and adaptability to mitigate through different scales, complexities and associations, which makes the final architectural form or expression predicated upon the particular local condition as the subject matter. For example; if the subject matter is concerned with movement and circulation as a main system, the architectural formal qualities would then reflect a dynamic and vibrant expression. This concept is articulated by Spuybroek as the redefinition of Gottfried Semper’s fourth element of

⁸⁷ Branzi, Andrea: [*Weak and Diffuse Modernity* The World of Projects at the beginning of the 21st Century], Milan, Skira, 2006

architecture - fire, the realm of sensation - as the continuum which the surface of action - plan - the act of building - construction - and the surface of perception - cladding - exist within, asserting experience as the essence of the architecture of continuity⁸⁸.

The Yokohama Port Terminal project built in 2002 by Foreign Office Architects (FOA) is based on an agenda which calls for combining fast and slow functions associated with a model of transportation and connecting it with an uninterrupted pattern flow and circulation for people, vehicles and products. From this agenda, FOA defined the logistics system as the subject matter and established a network of relations capable of accommodating difference and incorporating change without destroying its internal coherence.



Figure 3.12: FOA, The Yokohama Port Terminal, Yokohama, Japan, 2002

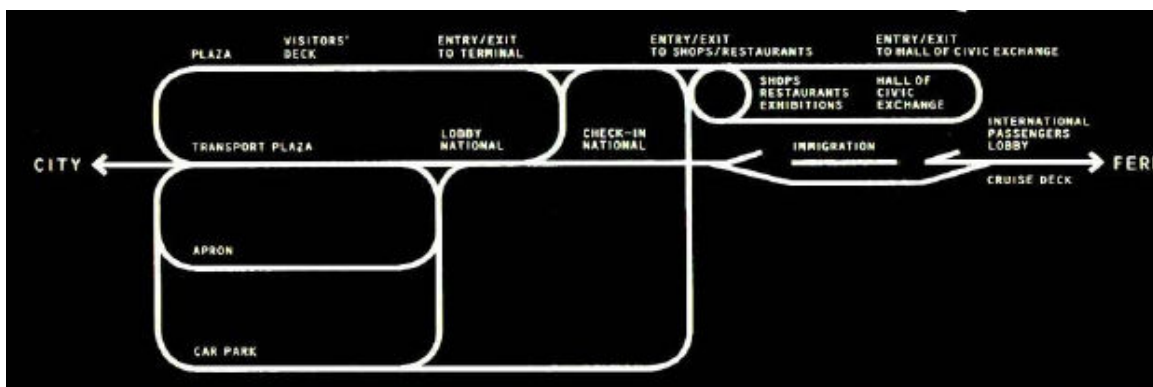


Figure 3.13: FOA, The Yokohama Port Terminal, Yokohama, Japan, 2002

⁸⁸ Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

Formally, this system of relations was implemented on devices such as 'permeable boundaries', 'flexible internal relationships', 'multiple pathways' and 'fluid hierarchies' transforming the architectural form and the spatial qualities into a form of indexing the organization of function and flow. In this type of organization from an urban system point of view, 'linkages' takes precedent over borders as the main spine of skeleton of the architectural form, borders then become a 'smooth' surface blurred within different hierarchies of nodes.

The interchangeable relationship between movement and dynamic architecture created an experience where the body becomes "an agent in motion, forcefully shaping the space that receives it, more a participant than a mere occupant."⁸⁹

Another example showcasing the capacity of fusion to digest different issues is The 21st Century Museum of Contemporary Art in Kanazawa, Japan built by Sanaa in 2004. The main requirement for this project is to maximize the level of human interaction specifically from the adjacent neighbourhoods with the museum.

In an effort to search for formal capacity to engage with different social aspects of neighbouring communities, Kazuyo Sejima used diagrams as a tool facilitating the investigation of the adjacent urban field as means of thinking about organization and as "momentary clusters of matter in space, subject to continual modification"⁹⁰.

The variables in an organizational diagram include both formal and programmatic configurations: space and event, density and distribution. In an urban context, organization implies establishing relationships between active systems and networks via a platform of variable public activities. Sanaa represented the subject matter - which is the structure of the adjacent urban fabric - as a matrix organizing the repetition of architectural components and program such as circulation, administration areas, courtyards and galleries. The architectural form reflects the overall organization of functions centralized and surrounded by continuous circulation paths performing as an

⁸⁹ Shahrokhi, Amir: [*The Emergence of an All Space*], extracted from: <http://specialez.fr/blog/2010/06/23/the-emergence-of-an-all-space/>

⁹⁰ Allen, Stan , [*Diagrams matter*], ANY: Architecture New York no.23 1998 / p.16-19

extension of the city with its internal streets, nodes and common places fusing all components as part of the public realm. The circular perimeter of the museum is driven by the concept of increased permeability to promote a sense of proximity between the building and the city.

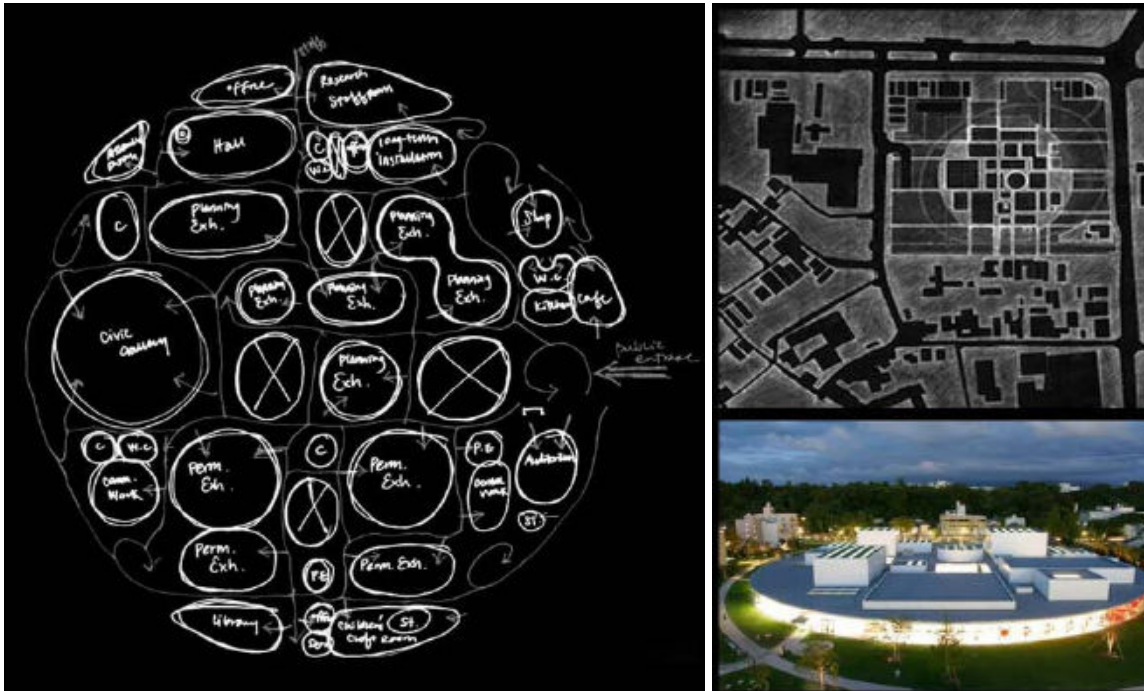


Figure 3.14: Sanaa, The 21st Century Museum of Contemporary Art, Kanazawa, Japan, 2004.

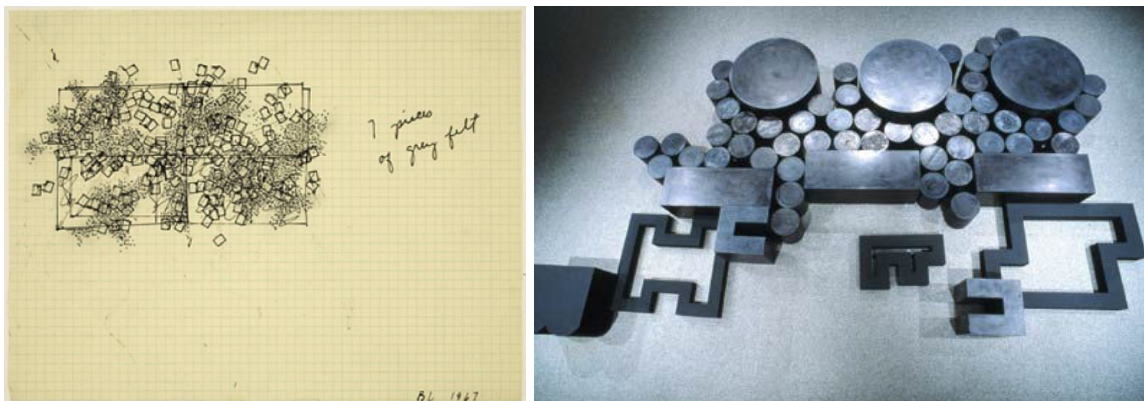


Figure 3.15: Barry Le Va's, Bunker, 1995

Sanaa's experimentation with the relationships between nodes, borders, and links reflects Barry Le Va's work, which represents the essence of a trial-and-error process using cluster organization as a theme - a post-minimalist concept which reacts to Cubism's compositional principles; his work also represents a process of investigation of

the relationship between points and configurations, and sequences of events based on local relationships as a form generator.

Another example is MVRDV's SpaceFighter The Evolutionary City (Game) proposal in 2005; this project takes the concept of fusion between architectural elements and systems to an extreme by focusing on the production of a region in an ever-increasing complexity of systems and environments.

It is a form of emergent urbanism in favour of the blurring of boundaries through dynamic interaction of parts and participants. The physical form produced in the process of blurring of boundaries is expressed as an 'urban state' rather than an 'architectural form'; Andrea Branzi calls this formal expression "the city without architecture" which he defines as "the city whose functions no longer occur through the devices of architecture...but through systems of electronic instruments, products and information...a city whose external image no longer corresponds to the activities carried out internally."⁹¹

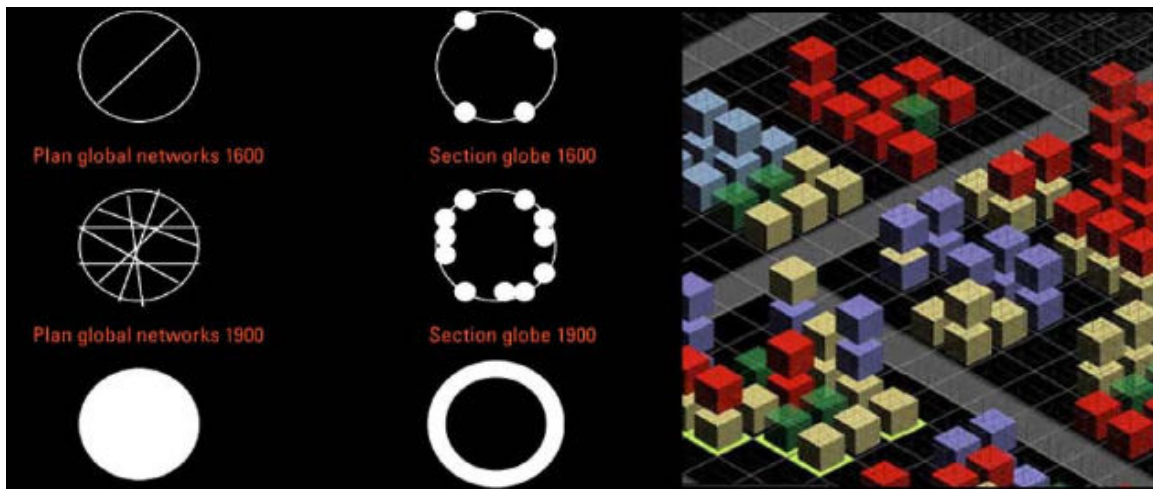


Figure 3.16: MVRDV, SpaceFighter The Evolutionary City (Game), 2005

MVRDV's subject matter in this case is information, a term which represents constant variation and transformation for the objective of creating a city that changes over time and engages itself with individuals as a possible collective. Therefore, all urban

⁹¹ Branzi, Andrea: [*Weak and Diffuse Modernity* The World of Projects at the beginning of the 21st Century], Milan, Skira, 2006

components are then considered unstable and functions can no longer be assigned to a specific space, but instead to a generic formal matrix which always expands or shrinks adapting to the nature of function. This micro scale system is reflected on a macro scale and provides the city the flexibility to readapt and renew itself based on its internal functions. Fusion is therefore achieved through what MVRDV calls the principle of 'attraction' which builds synergies between urban elements and promotes emergence.

I would like to conclude this section with an interpretation of Alison Smithson's argument regarding integration of systems as architectural elements and adapt it to this context by stating that 'fusion' "epitomize[s] the anonymous collective; where the functions come to enrich the fabric, and the individual gains new freedom of action through a new and shuffled order, based on interconnection, close-knit patterns of association, and possibilities for growth, diminution, and change"⁹². As a methodology I believe 'fusion' represents an apparatus for architectural form to establish a framework for continuity which brings back to architecture its critical role.

SECTION - III - CONCLUSION

The synthesis of the design strategies of 'superimposition', 'smoothness' and 'fusion' as an antithesis to Cartesiansim and as a manifestation of establishing consistencies between physical, cultural and social contexts provides the basis for an architectural proposal with the capacity to engage the user with the architectural form and accommodate programmatic variation and changing intensities of activities and functionalities. Also, the syntax derived from these design methodologies constitutes a language of responsive architecture which could provide a level consistency of flow, perception and action with various contextual conditions and therefore create an environment of continuity, which has unifying qualities.

I believe the method of 'superimposition' is key to establishing rapport on the urban scale within the built environment and to forming a level continuity between the urban structure and the local condition through integration and identification of consistencies

⁹² Smithson, Alison. *[How to Recognise and Read Mat-Building: Mainstream Architecture as it has Developed Towards the Mat-Building]* Architectural Design, 1974, p. 573-582.

which exist in the proposed site and is mainly concerned with issues of scale transition from low to high rise and different grid orientations.

'Smoothness' however, provides a systematic organization of parts and unfolds the inconsistencies between the contextual condition and human activities spatially on the architectural scale where action and perception are combined and the experience of continuity is established. The architectural methodology of 'smoothness' is an important tool for the design proposal to architecturally engage various contextual conditions, natural and built - residential and commercial - with the proposed programmatic variation in a systematic manner implementing the concepts of integration and social continuity.

Finally, the method of 'fusion' is instrumental in establishing continuity between flow, action, perception and structure on the urban and architectural scales and functions both internally and externally through webs of interconnectivity adaptable to patterns of activities and systems of flow and movement generated by the programmatic proposal and the existing site characteristics. The concept of 'fusion' represents Stan Allen's vision for the future city, which states that: "The new institutions of the city will perhaps occur at moments of intensity, linked to the wider network of the urban field, and marked not by demarcating lines but by thickened surfaces"⁹³. I think 'fusion' is critical for this proposal in terms of formulating an architecture based on the transition between contexts and the transition between activities where relationships and its experience are central.

Gilles Deleuze states that: "every object is exceeded by the forces that shaped it"⁹⁴. My goal for the proposal of the architectural agenda is to respond to the forces that shaped the objects by exposing the relationship between these objects and through organization of relationships creating an environment predicated on a variety of conditions and continuity of experience, which would actively combine the physical qualities of the built environment with the user experience in the same realm.

⁹³ Allen, Stan, [*Points + Lines: Diagrams and Projects for the City*], New York, Princeton Architectural Press, 1999

⁹⁴ Spuybroek, Lars: [*The Architecture of Continuity Essays and Conversations*] Rotterdam, V2_Publishing, 2008

CHAPTER 4 - DESIGN PROPOSAL

This chapter presents a design proposal that represents a critical architectural model driven by a demographic phenomenon and conceptualized through a design strategy based on the synthesis of agendas related to aging - social, programmatic, urban and architectural - and on the set of conclusions and lessons established in this research.

SECTION - I - PROBLEM ANALYSIS / THE CONCERN

By examining the statistical analysis of chapter 1 in relation to the current assisted living environments based on the North American institutional model, it becomes clear that a shift in paradigm will occur in the near future towards private care models for the elderly with means, and gradually towards communal based models for the elderly with lower income levels - which is currently about 55% of the population over 65 years who earn less than \$40,000 a year - due to the inability of the public sector to adequately respond to future demands. Therefore, aging in place becomes highly anticipated especially if planning policies respond to the high growth of the non-residential sector by directing it towards existing communities.

The establishment of the social agenda can be clearly defined through examining Maslow's pyramid of needs, where I find that current environments designed for the elderly are highly driven by codes and standards that are only addressing the physiological and the safety aspects related to the elderly, and stop short of responding to psychological and emotional needs, which put the elderly in a position of social discontinuity.

Therefore, I strongly believe that the future environment needs to be conceived based on principles of social continuity and on integration of different age groups in terms of services and policy making rather than separation, and on social inclusion of the elderly which in turn will reassert self esteem and self actualization and complete the picture of Maslow's pyramid.

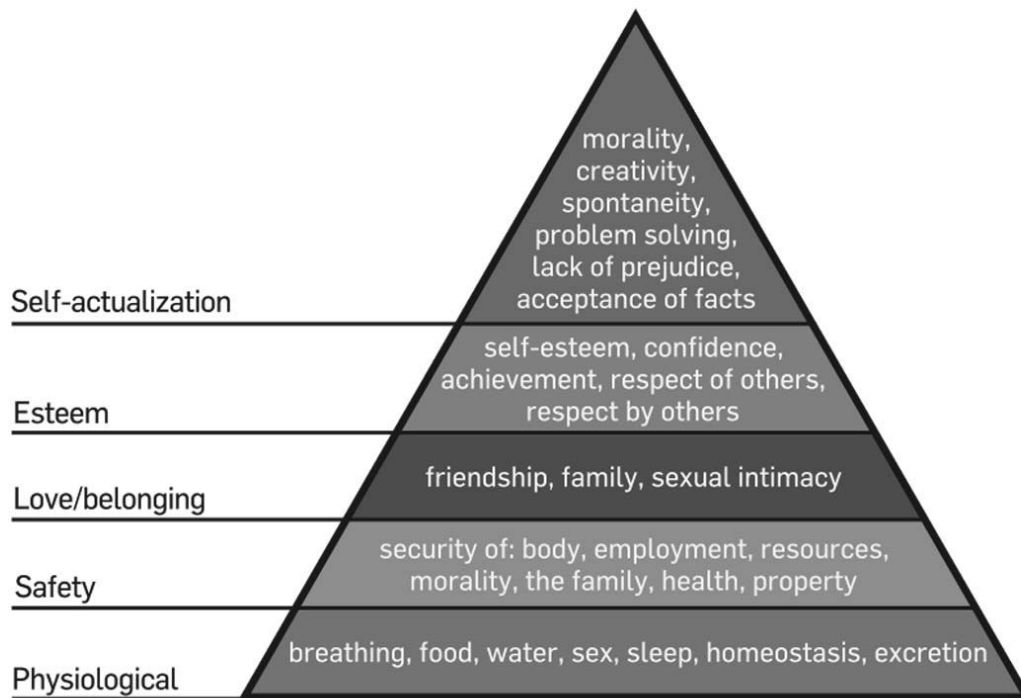


Figure 4.1: Maslow's pyramid of needs

Another key obstacle for graceful aging is the urban structure; when vehicles take precedence over pedestrians in the urban structure, the level of accessibility and proximity to services becomes compromised and the opportunity for the street to serve as a social venue is lost. Therefore, promoting walkable communities would enforce close proximity between residential areas and services and would create a functioning public realm based on principles of accessibility, safety and comfort, where intergenerational socializing and civic participation becomes available for all community members.

SECTION - II - THE CONDITION

Part 1. Site Selection

The choice of site resulted from a process of demographic statistical analysis of the Greater Toronto Area. The analysis showed the City of Burlington as the city with the highest concentration of elderly population compared with the rest of the GTA with

15.4% of population over 65 years compared to the GTA average of 11.8%. The City of Burlington also has a high concentration of baby boomers equal to 26.5% compared to the 25.2% GTA average which is an important factor to consider for the future growth pattern of the city.

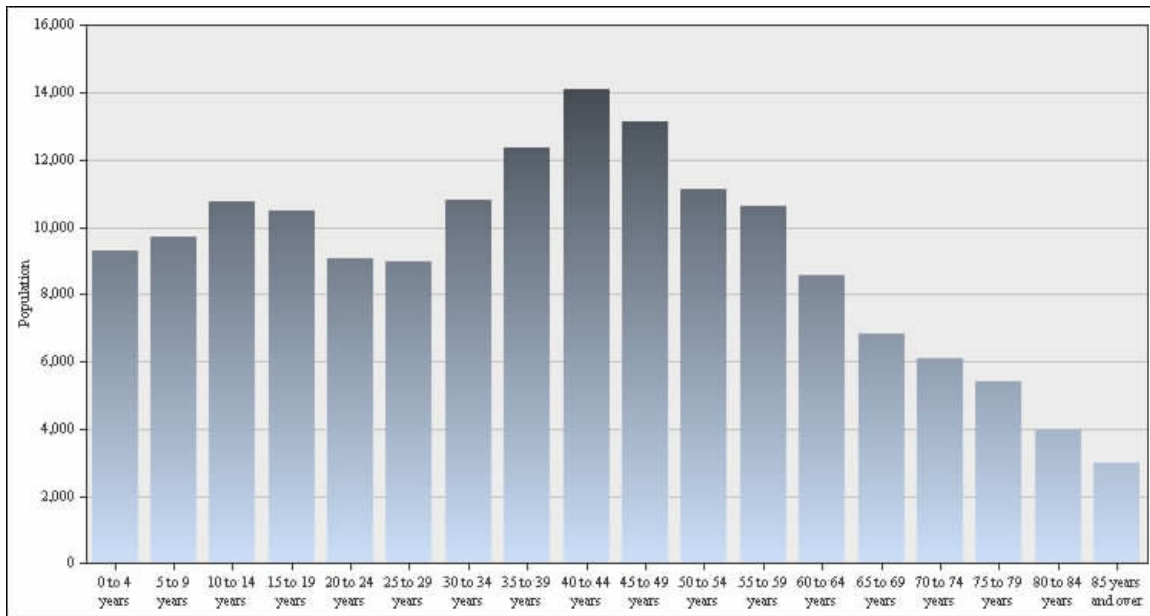


Figure 4.2: City of Burlington population by age group, Statistics Canada, 2006

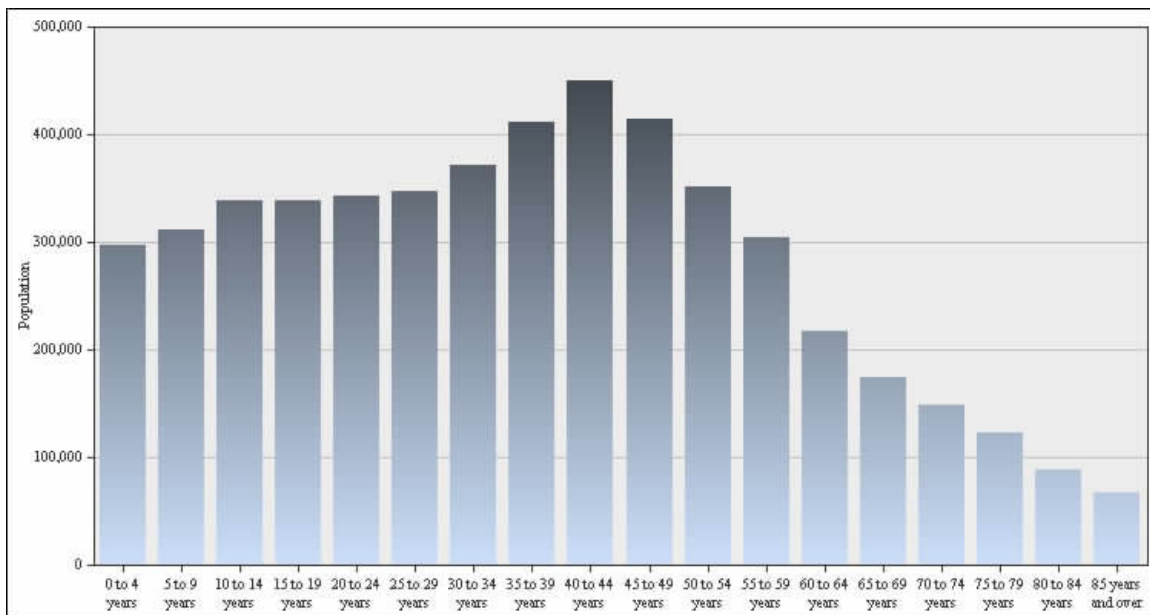


Figure 4.3: GTA average population count by age group, Statistics Canada, 2006

The second part of the statistical analysis is based on mapping income levels in the City

of Burlington combined with mapping the demographic distribution to point out high concentrations of aging population with medium to low income level where the concept of aging in place is considered a more affordable and sustainable way of living. The following statistical maps reflect total population distribution in the City of Burlington by age, focusing on the population 65 years and over.

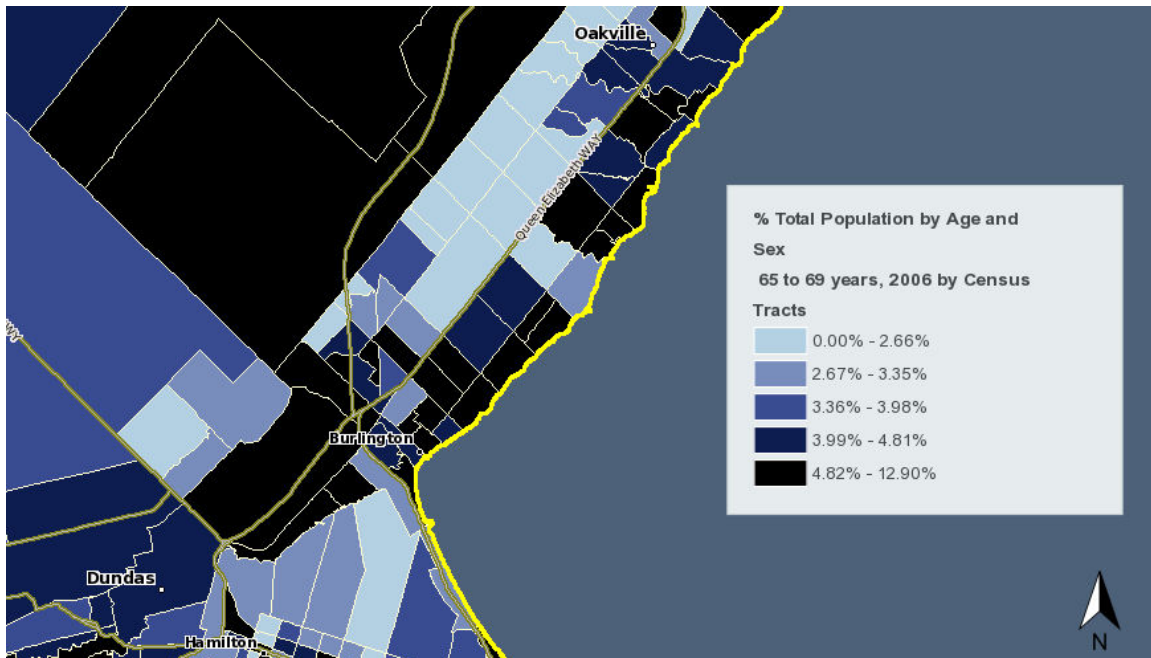


Figure 4.4: City of Burlington % of total population (65 to 69 years), Statistics Canada, 2006

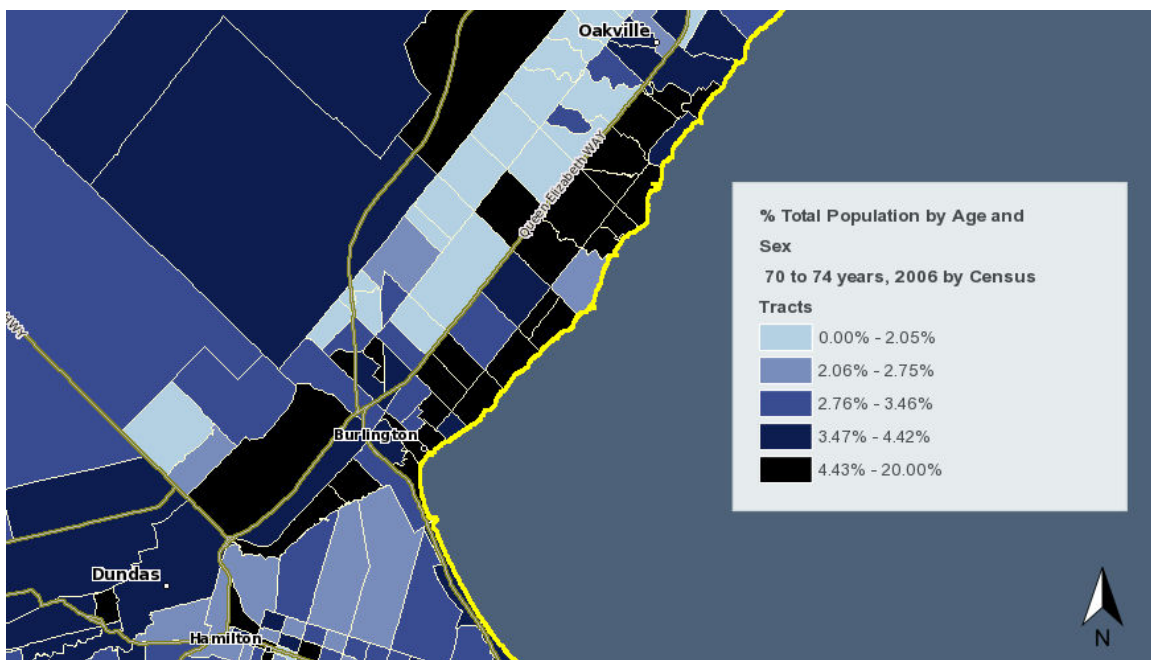


Figure 4.5: City of Burlington % of total population (70 to 74 years), Statistics Canada, 2006

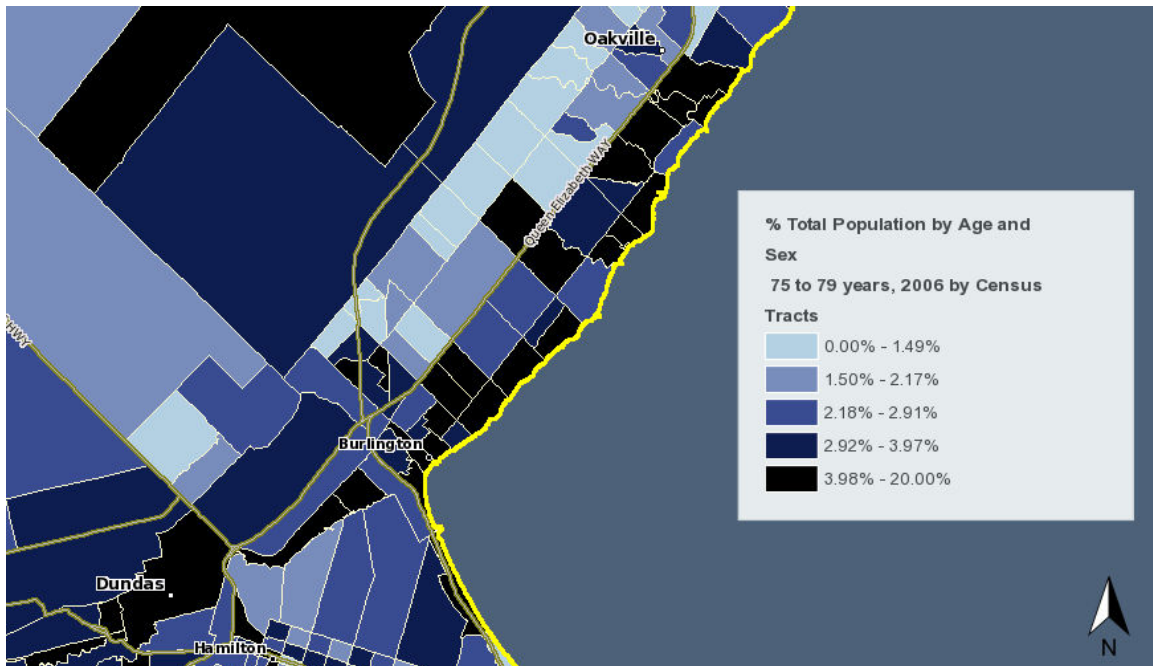


Figure 4.6: City of Burlington % of total population (75 to 79 years), Statistics Canada, 2006

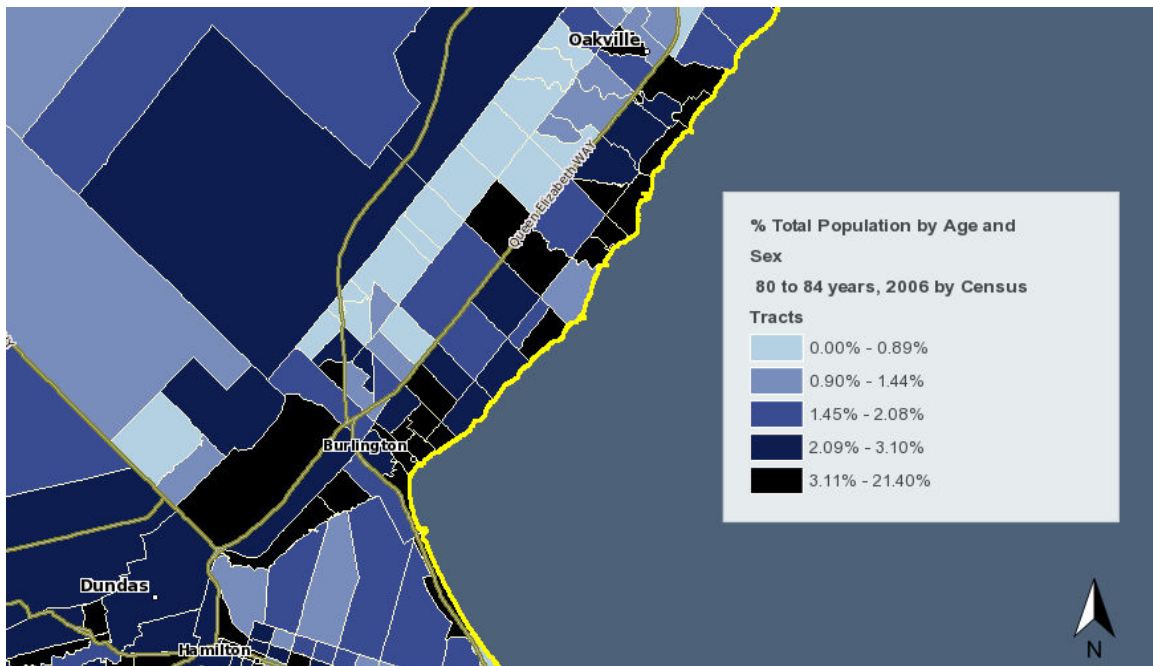


Figure 4.7: City of Burlington % of total population (80 to 84 years), Statistics Canada, 2006

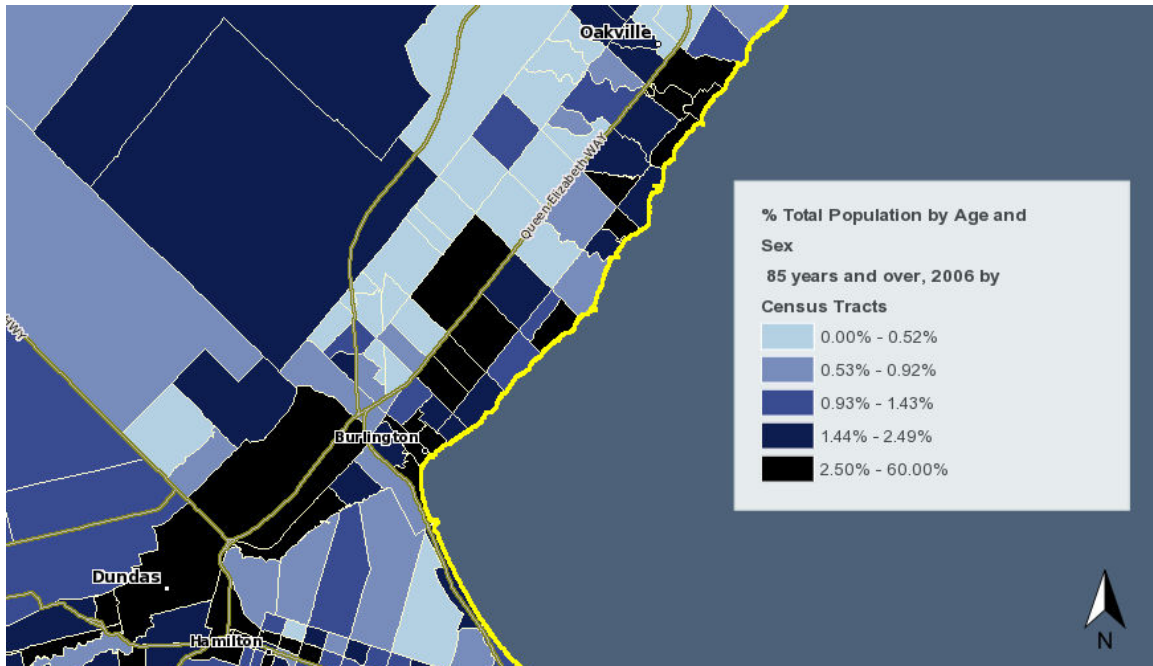


Figure 4.8: City of Burlington % of total population (85 years and over), Statistics Canada, 2006

The following statistical map reflects median income levels distribution in the City of Burlington.

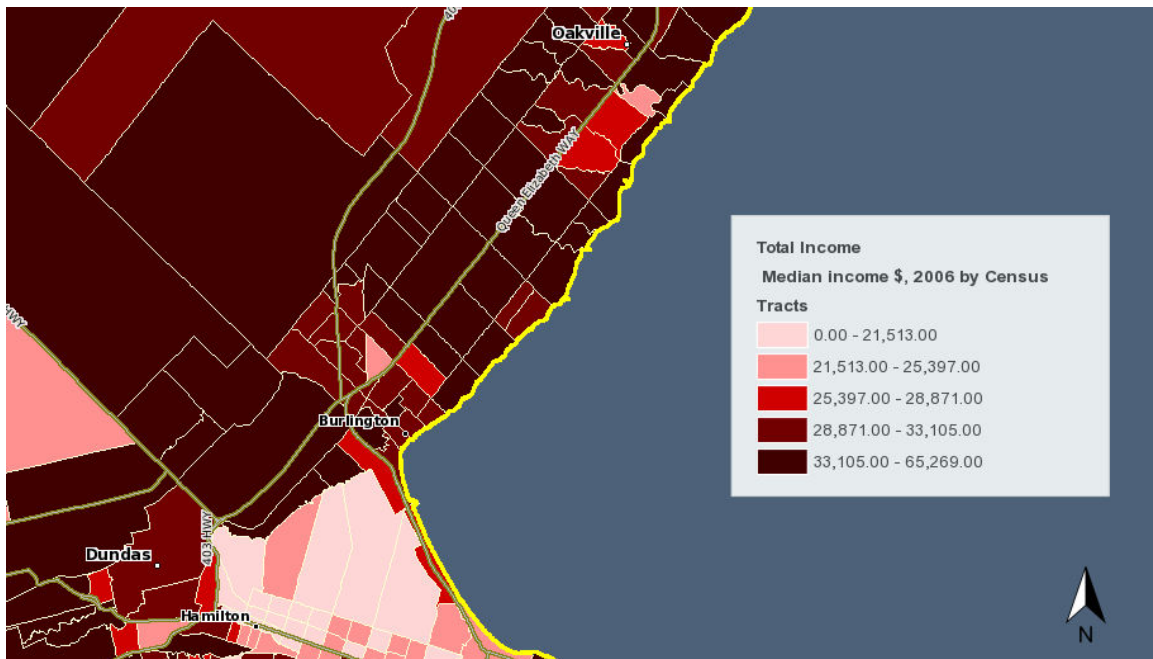


Figure 4.9: City of Burlington median income, Statistics Canada, 2006

My target is to point out the areas which have low income levels and a high

concentration of the elderly population. By overlapping the maps above I can indicate the targeted areas; one of these areas is located south of Lions Park at Martha St. and New St. and Lakeshore Road, which is shown in the two maps below.

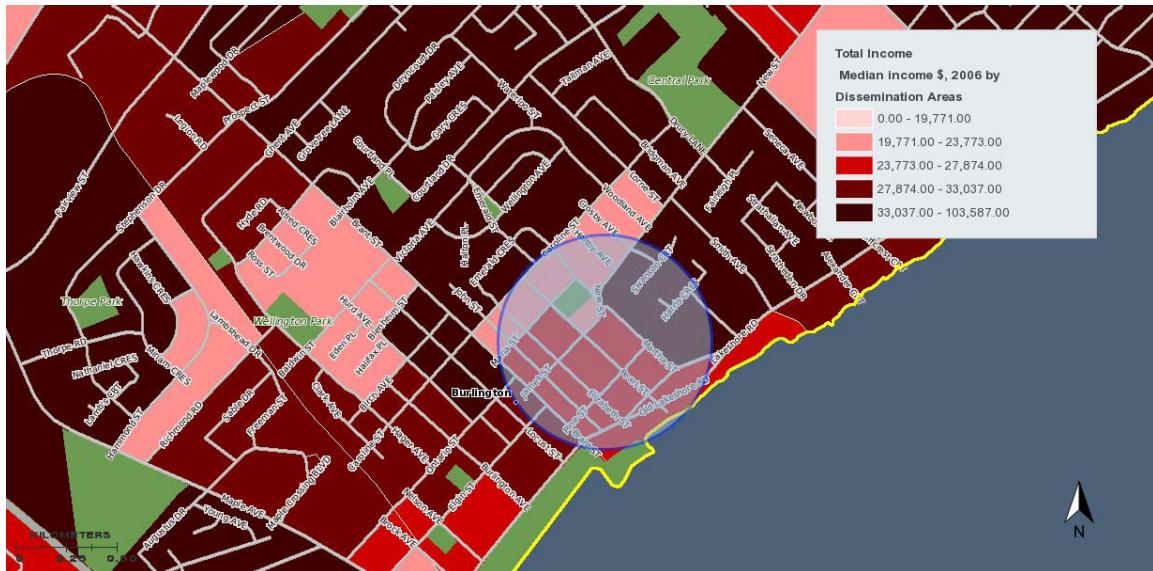


Figure 4.10: City of Burlington median income, Statistics Canada, 2006



Figure 4.11: City of Burlington % of total population, Statistics Canada, 2006

The third step in the site selection process was to find a vacant or underdeveloped property within the selected area. The parcel at the intersection between Martha St. south of Lakeshore Road was clearly the most underdeveloped site in the area of interest.



Figure 4.12: Proposed site



Figure 4.13: Proposed site

This land includes a large area of surface parking, three motels, and 8 other small businesses. This parcel of the city is strategic in terms of location, falling between the

City of Burlington's downtown area and a residential area on the east side, while its waterfront location enriches the proposed program and allows the project to serve as a link between the surrounding commercial and residential areas and the waterfront.

Part 2. Site Conditions / analysis / opportunities

This section examines site conditions and the main features and characteristics of the selected site and context. The total site area is approximately 26,250 sq.m., Old Lakeshore Road, included in the site, comprises about 12% of the total site area, and existing structures on the site comprise approximately 22.5% of the total site area.



Figure 4.14: Proposed site boundary and area

According to the City of Burlington 'OnPoint Map' system - the proposed site houses one property built in 1843 with 'grade A' designation - 2084 Old Lakeshore Rd. - which falls under Ontario Heritage Act (OHA). The map also shows other properties listed in the heritage inventory by the City of Burlington but do not fall under OHA. According to City of Burlington heritage rating system, "A" properties "are considered to have the

highest cultural heritage significance to the City of Burlington and are of the utmost priority of heritage preservation and conservation via designation under Part IV of the Ontario Heritage Act.”⁹⁵



Figure 4.15: Key features within approximately 5 minute walking distance from the site

The site is located within a 500m walking distance to the main downtown area of the City of Burlington and the Lake Ontario Water Front Trail. Some of the main facilities located in this zone are: Martha’s Landing Retirement Residence, Lakeshore Public School and Downtown Burlington Bus Terminal. Landmarks include the Brant St. Pier, the City of Burlington City Hall and Spencer Smith Park. Within a 1km radius, there are four main facilities: the Burlington Art Centre, Burlington Public Library, Ron Edwards Family YMCA and the Burlington Seniors’ Centre.

The context surrounding the site is divided into four main areas - residential, commercial, hotels and waterfront - and includes urban and natural environments. Currently there is a clear division and discontinuity between the residential area and the

⁹⁵ City of Burlington, [Heritage Rating System], extracted from:
(<http://www.burlington.ca/heritage/Heritage%20Burlington%20Property%20Rating%20System.pdf>)

commercial area, and between those two areas and waterfront.

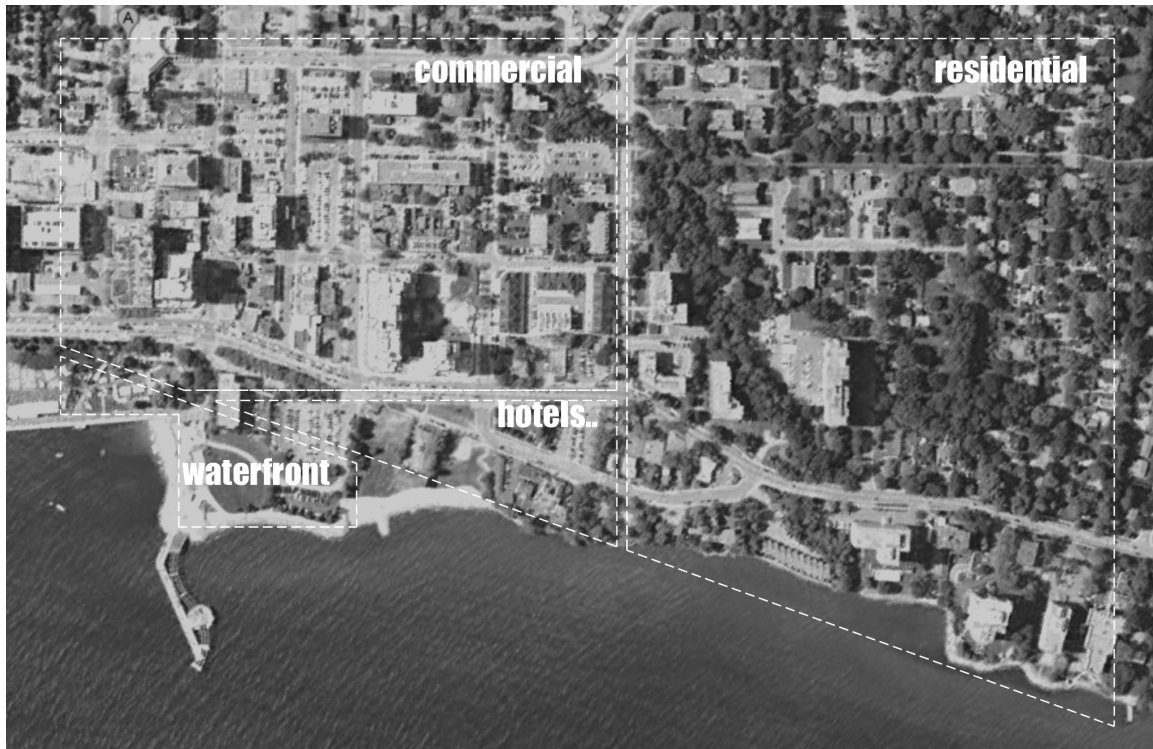


Figure 4.16: Zones and contextual activities



Figure 4.17: Existing contextual discontinuity



Figure 4.18: Selected area and its opportunity to function as a connective tissue

From an urban point of view, the only open public/civic area available is Spencer Park, a linear park at the waterfront. The park lacks dynamic interaction with the downtown commercial area which makes it disconnected from the vibrancy of the commercial area. One of the opportunities for the site is its capacity to function as the Eastern gateway to downtown Burlington along Lakeshore Road. The site could also function as a link between the two parts of the Waterfront Trail where the first part runs across the east side of Burlington's residential area and terminates at the east side of Martha St. The second part runs along the waterfront at Spencer Smith Park starting from Elizabeth St and Lakeshore Road.

This condition of discontinuity addressed here provide the selected site the opportunity to serve as connective tissue between the urban and the natural contexts and between the different existing urban zones. This level of continuity can be established through the following initiatives:

1. Turn obstacles into opportunities for physical and visual continuity.

2. Link the lakeshore and the residential area.
3. Engage the lake and represent it as natural element that is part of the site.
4. Strengthen the axial relationship with the downtown area on a visual and a physical level.
5. Utilize the east side of the site as a visual connector and a gateway to downtown Burlington.



Figure 4.19: View looking south towards the site



Figure 4.20: Step 1: Turn obstacles into opportunities for physical and visual continuity



Figure 4.21: Step 1. Turn obstacles into opportunities for physical and visual continuity



Figure 4.22: Step 2. Link the lakeshore and the residential area



Figure 4.23: Step 3. Engage the lake and represent is as natural element that is part of the site



Figure 4.24: View looking north east showing the relationship with the waterfront



Figure 4.25: View looking east showing the site from downtown Burlington



Figure 4.26: Step 4. Strengthen the axial relationship with the downtown area on a visual and a physical level



Figure 4.27: Step 5. Utilize the east side of the site as a visual connector and a gateway to downtown Burlington



Figure 4.28: View looking west, showing opportunity for gateway

Part 3. Program

In terms of program, my survey of the area indicates a lack of specialized health facilities, lack of proximity to a social and cultural hub and a very deteriorated condition

for the existing hospitality facilities.

The lack of services and the high percentage of elderly population in this area provide an opportunity for a new social experience which provides the opportunity to implement some of the programmatic initiatives indicated in Chapter 2 in this context and promote aging in place based on the Danish model which calls for deinstitutionalization and the rejection of the specialized environment for the purpose of achieving social continuity, social sustainability and efficiency through integration of amenities, services within an accessible environment to all age groups allowing for intergenerational participation where the objective is for the elderly, as individuals, to become participating members of society rather than spectators. Therefore, the main programmatic components will be focused on three main areas:

- A. Retail component, which provides a functional extension of the downtown commercial area, local differentiation and serves as a venue for a larger demographic.
- B. Wellness component, which supports the healthcare model and functions as an alternative to active sports
- C. Knowledge transfer component, which caters to the market demands generated by the elderly population and serves as a venue for civic participation and for intergenerational exchange.

The three models above translate into a mixed use program which in this case combines commercial, wellness and cultural amenities in addition to a hotel residential component. By integrating these services and amenities with a high level of accessibility and proximity to an aging population of low to mid income level, the concept of aging in place is achieved by introducing an environment of continuity which supports an independent lifestyle for the elderly and allows for variation of activities.

The following is a high level estimate of indoor components of the proposed program with its associated areas:

Hotel and residential component

112 rooms (app. 45-65 sq.m. per room) and back of house and circulation

Subtotal area = 13,620 sq.m.

A. Retail component

Includes: lounge, main restaurant (200 people), grill bar (50 people), (2) cafes (120 people total), shops and kiosks and BOH

Subtotal area = 13,000 sq.m.

B. Wellness component

Includes: Spa (including change rooms and massage therapy rooms), whirlpools, lap pool, sauna/ Jacuzzi, gym and health care clinic

Subtotal area = 3,005 sq.m.

C. Cultural component

Main conference, multi-purpose room (300 people), seminar rooms, library, learning centre, studio and gallery

Subtotal area = 6,195 sq.m.

Total A+B+C area (including circulation) = 41,209 sq.m.

In addition, some of the program components will have partial outdoor areas, such as restaurant and café seating areas, outdoor theatre, etc...

SECTION - III - POSITION / DESIGN STRATEGY

The overall challenge facing the elderly is the social discontinuity which is a direct result of the dichotomy between codes and legislation and basic human needs on one level and between the architectural and the urban environment on another level.

To overcome this dichotomy and establish continuity, the design proposal will need to provide means for articulating exchange between users' action and physical elements, diversity of physical environments, and complexity of programmatic and contextual conditions in a system or a framework that is negotiable, operable and highly comprehensible, as in a concept which Thom Mayne describes as the balance "between local specificity and universal idealism"⁹⁶. I propose to address these challenges through a design strategy based on establishing a framework of architectural continuity on three levels:

1. Tectonic

⁹⁶ Mayne, Thom, [*Morphosis Buildings & Projects*], New York, Rizzoli, 2008

2. Contextual
3. Programmatic

Part 1. Tectonic Continuity

This part of architectural continuity addresses the syntax of exchange between the user and the built environment on the tectonic level generating an experience of continuity on a variety of scales.

For the elderly this would mean engagement with a variety of physical environments in a consistent manner taking in mind their physiological, psychological and emotional needs. Therefore, I propose an integration of Universal Design Principles with an architectural organizational methodology based on the model of 'fusion' - which I referred to in Chapter 3 - as a framework based on a spatial communication system and derived from functional relationships and urban structure design principles.

| | | DESIGN PROPOSAL design strategy | | | | | | | |
|-----------------------------|------------------------------|--|-------------------------|-------------------------|--------------------|----------------------------|-----------------|----------------|--------------------------|
| | | Clear circulation (links) | Modularity & repetition | Reference point (nodes) | Compact / Thick 2D | Urban continuity (borders) | Continuous flow | Clear armature | Organizational hierarchy |
| UNIVERSAL DESIGN PRINCIPLES | 1. Equitable use | Hi | Mid | Low | Hi | Hi | Hi | Mid | Low |
| | 2. Flexibility in use | Hi | Hi | Mid | Hi | Hi | Hi | Mid | Low |
| | 3. Simple & intuitive design | Hi | Hi | Mid | Hi | Hi | Hi | Hi | Hi |
| | 4. Perceptible information | Hi | Hi | Mid | Mid | Hi | Hi | Hi | Hi |
| | 5. Tolerance for error | Hi | Hi | Hi | Hi | Mid | Hi | Hi | Hi |
| | 6. Low physical effort | Hi | Mid | Hi | Hi | Hi | Hi | Mid | Low |
| | 7. Size and space | Mid | Mid | Mid | Mid | Hi | Hi | Mid | Hi |
| | | FUSION FEATURES | | | | | | | |

Figure 4.29: Fusion/ Universal Design Matrix

I think this strategy would evoke an opportunity to establish new connections and relationships that were hidden and provide a guideline for establishing continuity able to influence the shape and relationships between the various physical elements. This strategy is implemented through creating the above matrix to establish a hierarchical relationship between the seven principles of Universal Design and the design features of the architectural model of 'fusion' which I hope would turn the made - Universal Design - into part of the making.

This matrix shifts Universal Design from the realm of design process add on to the realm of integration which results in an experiential engagement with the user. The architectural language and some of the key configurations that could be produced would be based on the hierarchical order created starting with the 'strong' relationship established between 'fusion' features and 'Universal Design principles'.

The first relationship between the principle of 'equitable use' and 'clear circulation (links)' would result in a clear internal connectivity. When this order reflects the principle of 'flexibility in use', transitional spaces start to emerge, creating a variety of spatial qualities through a certain hierarchal order.

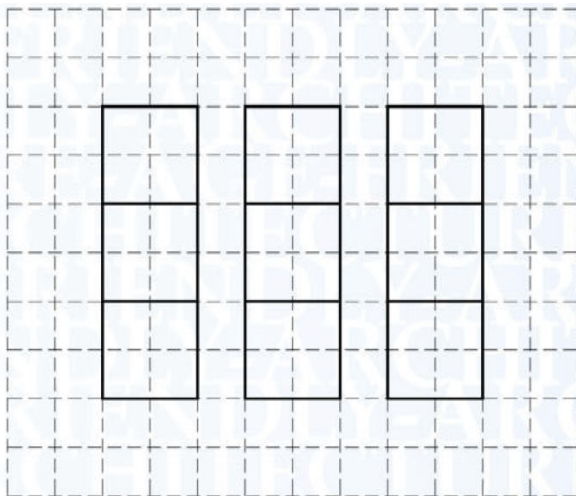


Figure 4.30: Equitable Use / Clear Circulation (links)

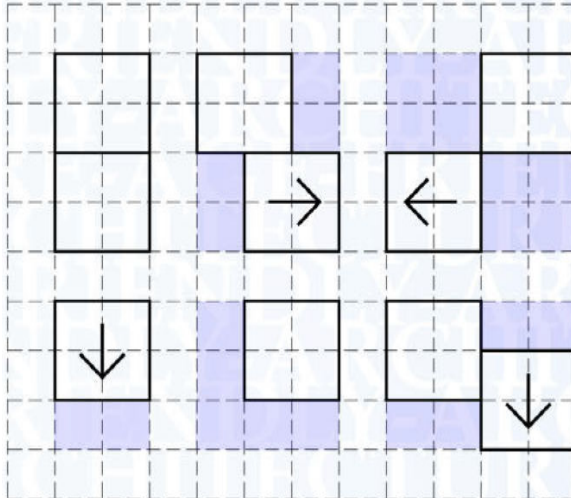


Figure 4.31: Flexibility in Use / Clear Circulation (links)

Another strong relationship exists between the principle of 'equitable use' and 'compact/thick 2D' which might produce a multi-level continuous surface linking all levels in an uninterrupted manner and might eliminate the need for stairs as a vertical circulation system. This configuration I think might be similar in its expression to MVRDV's Villa VPRO which was designed to support an adaptive social ecology in the workplace through continuity of flow and continuity of fields.



Figure 4.32: Equitable Use / Compact & Thick 2D

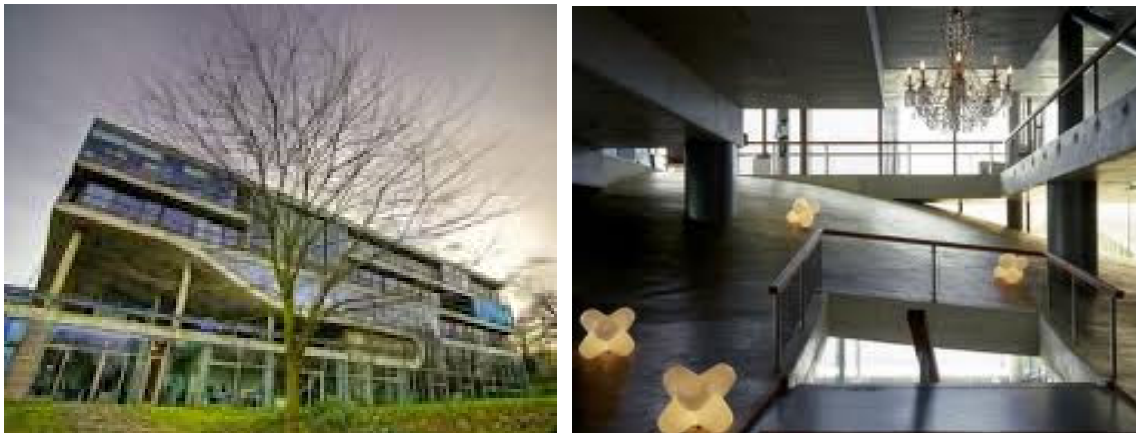


Figure 4.33: MVRDV, Villa VPRO, Hilversum, The Netherlands, 1997

A significant relationship is established between 'equitable use' and 'urban continuity' that might produce an architectural configuration where the physical border of the building would seamlessly merge with a continuous urban horizontal surface and create a place of porous interconnectivity. I believe this concept is represented in Snohetta's Oslo Opera Theatre where a seamless urban/architectural experience is stressed.

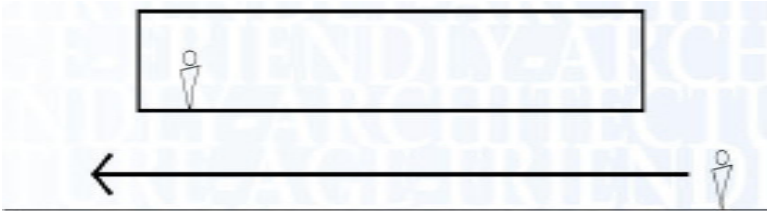


Figure 4.34: Equitable Use / Urban Continuity



Figure 4.35: Snohetta, Oslo Opera Theatre, Norway, 2007

A language of continuity of flow and continuity of environments that is similar in principle to Jean Nouvel's Paris Philharmonie proposal in Parc de la Vilette is established through establishing a relationship between the principle of 'equitable use' and 'continuous flow'. The circulation loop created here dissolves boundaries and ends of the urban and the

architectural fields and asserts the a site strategy that lets the city flow through the project.

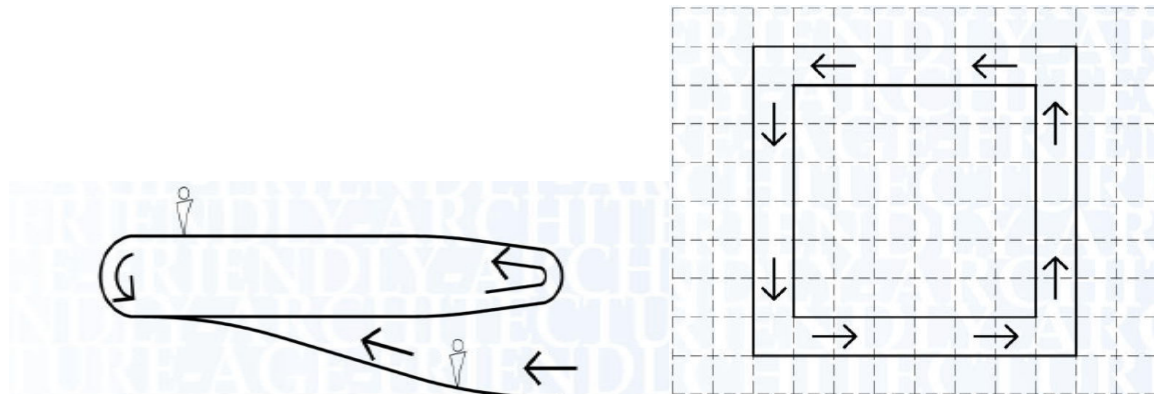


Figure 4.36: Equitable Use / Continuous Flow

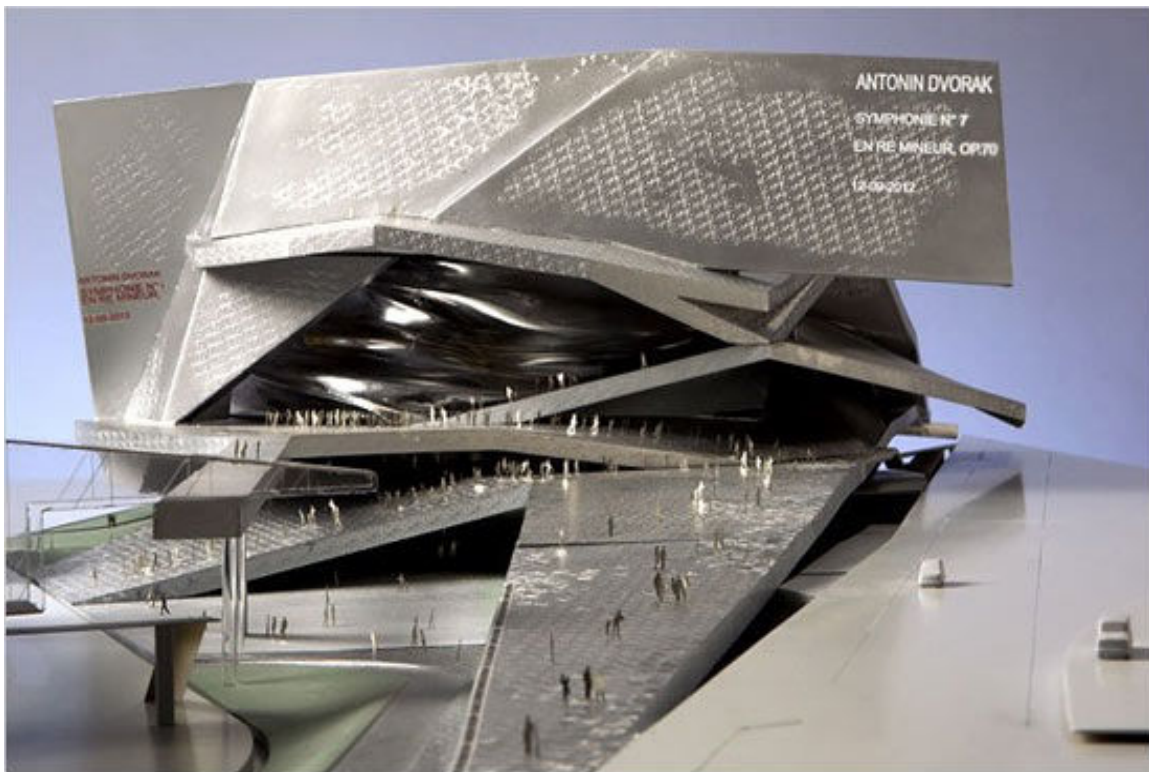


Figure 4.37: Jean Nouvel, Paris Philharmonie proposal, Parc de la Vilette, France.

The integration of the principle of 'simple and intuitive design' with clear circulation results in a level of transparency where main functions occur on visible edges and boundaries, connecting external and internal experiences, creating a projective relationship between the structure and its context, a concept which is clearly represented in Centre Georges Pompidou. This concepts starts to bring different

contextual conditions - local specificity - into one visual continuum.



Figure 4.38: Simple and Intuitive Design / Clear Circulation



Figure 4.39: Renzo Piano / Richard Rogers, Centre Georges Pompidou, Paris, 1977

Through the relation between the principle of 'simple and intuitive design' and reference points or nodes, the variation of surface - whether vertical or horizontal - and appearance creates an architectural depth and transforms architecture into a tool of communication with its users creating a continuous exchange between action and perception. This concept can be found present in OMA's Très Grande Bibliothèque where public spaces are expressed externally through voids and variation of transparency.



Figure 4.40: Simple and Intuitive Design / Reference Point (Nodes)

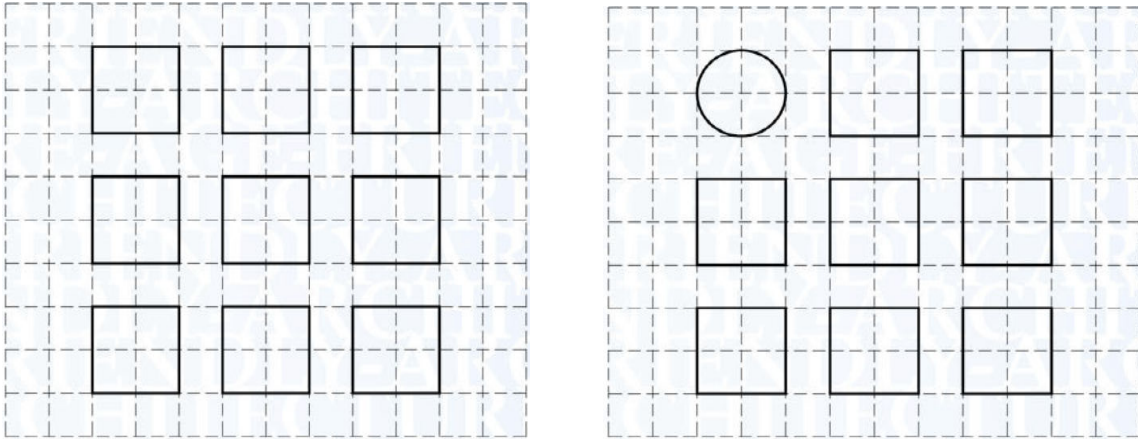


Figure 4.41: Simple and Intuitive Design / Reference Point (Nodes)

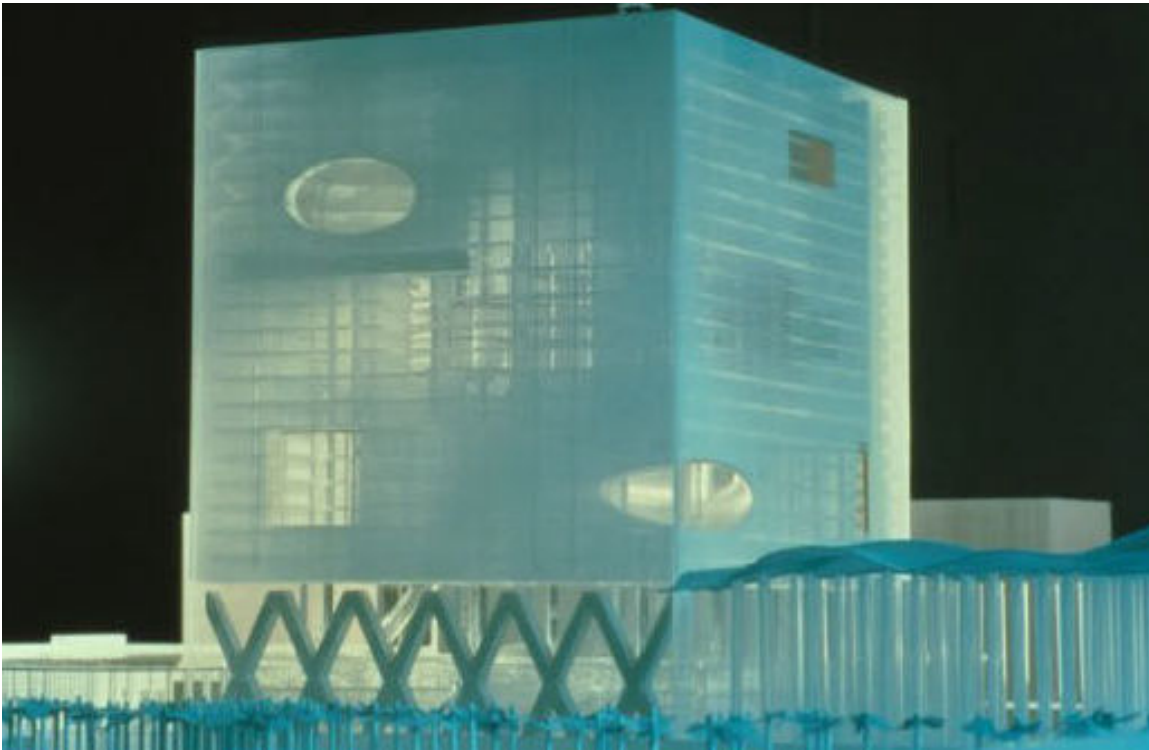


Figure 4.42: Rem Koolhaas, Très Grande Bibliothèque, Paris

The idea of establishing a continuous relationship between action and perception can be further emphasised through the integration of the Universal Design principle of 'perceptible information' and 'reference points' where architectural and landscape elements - such as skylights and courtyards - serve as nodes or areas of transition - a differentiated space - that are part of both the internal and external fabrics.

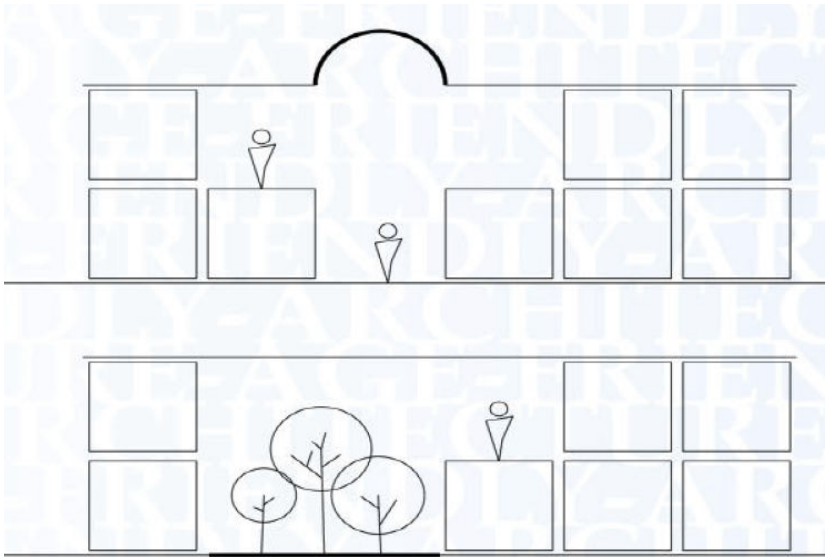


Figure 4.43: Perceptible Information / Reference Point (Nodes)



Figure 4.44: Kevin Roche and John Dinkeloo, Oakland, California, Museum of Art, 1961

Oakland Museum of Art in California and Robson Square in Vancouver provide examples of creating continuity between external and internal spaces through elements that are perceived internally and externally and serving as tools of communication and

connection between different environments on one level, and creating an organizational structure as an architectural condition in support of social organization on another level.



Figure 4.45: Arthur Erickson, Robson Square, Vancouver, 1979

The idea of integration between ‘perceptible information’ and ‘reference points’ can be further explored through other architectural elements such as roof structure, which can be viewed as a surface of perception and a surface of organization.

Santa Caterina Market in Barcelona provides an interesting example where Enric Miralles utilized the roof as an organizational tool and an architectural effect able to accommodate disparate activities and have the capacity to create continuous experience between different structures and urban conditions.

Another example following a similar strategy is the New Trade Fair in Milan by Massimiliano Fuksas; here the architect created local adjustments as a suggestion of variation in response to different local conditions of flow and movement. I believe that this established continuity between flow and structure created a level of exchange between the users action and his or her perception of the physical element and emphasised the idea of using tectonic operation as an informative apparatus.

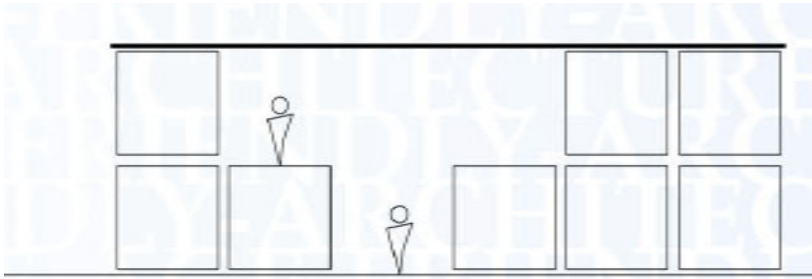


Figure 4.46: Perceptible Information / Reference Point (Nodes)



Figure 4.47: Enric Miralles and Benedetta Tagliabue, Santa Caterina Market, Barcelona, 2005



Figure 4.48: Massimiliano e Doriana Fuksas, The New Trade Fair, Milan, 2005

The concept of integrating 'tolerance for error' and 'organizational hierarchy' suggests an architectural condition where 'modularity' - one element which exists in many scales, forms and positions - becomes part of the architectural language and puts focus on the organization of relationships and allows for controlled variation.

The concept of controlled variation and modularity could be further explored in association with the design methodology of superimposition of grids inspired by François Morellet's art, creating different conditions of transparency and porosity in a field predicated on consistency and order.

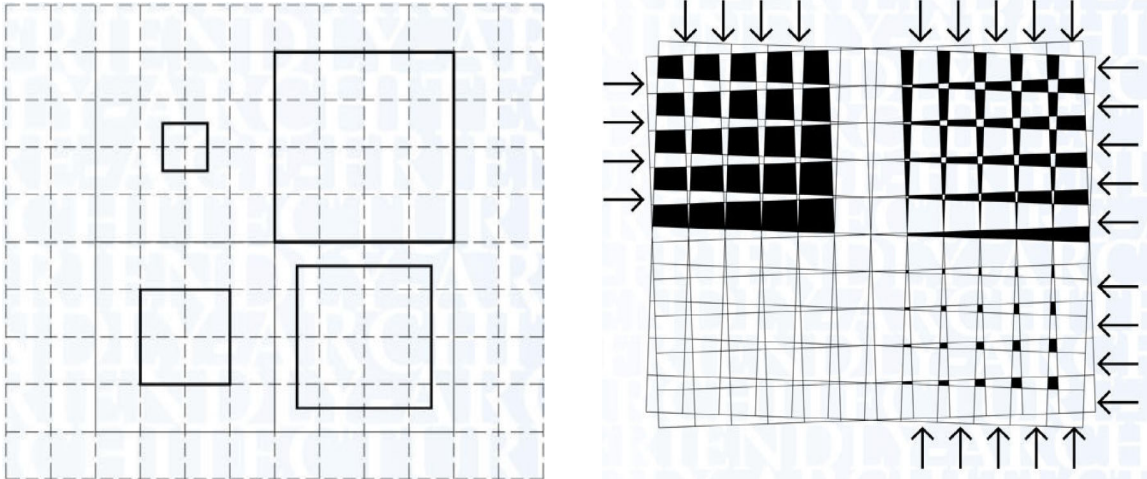


Figure 4.49: Tolerance for Error / Organizational Hierarchy

Another condition explored in this study is the relationship between the principle of ‘low physical effort’ and ‘continuous flow’. This relationship further emphasizes the concept of perception and focuses on simultaneous perception of varying depths within a loop of action and perception. In this condition, I saw an opportunity to link movement with structural organization by switching from a static view to a peripatetic view through reorganizing the physical element, which helps negotiate the complexity of the environment first visually and then physically reducing the physical effort for the user and enhancing the spatial experience.

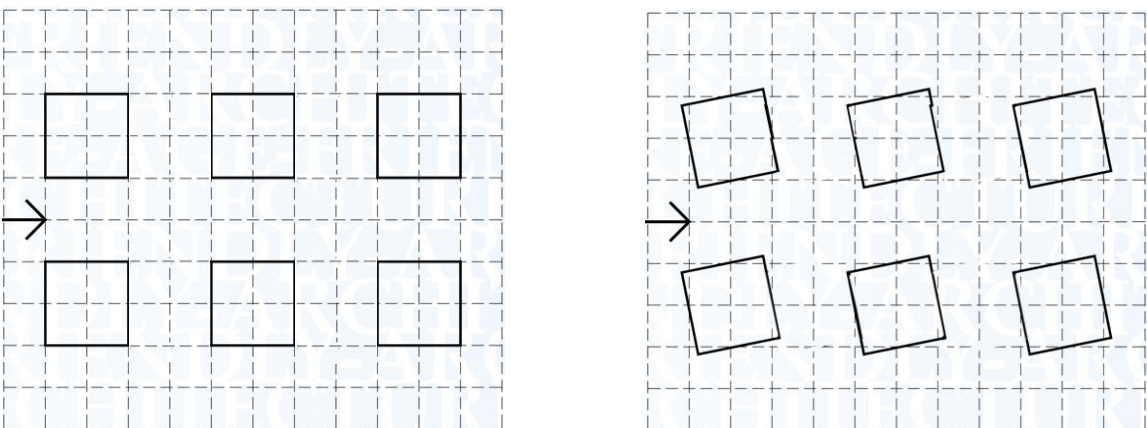


Figure 4.50: Low Physical Effort / Continuous Flow/ Perceptible information

The matrix created here I believe provides a step towards transition from process to product, a product in which Universal Design principles and the model of fusion form parts of its genes, establishing the experience of continuity on one level and addressing

the critical elements the elderly need on another level within one integrated process, which will bypass the institutional image and provide an inviting, safe and comfortable environment for the user.

Part 2. Contextual Continuity

In response to different contextual conditions - physical and functional - and the disparity of activities and uses currently existing on the selected site, establishing contextual continuity would require the construction of a unifying element able to bring order and meaningful transition of environments, actions and activities. My proposal is based on utilizing the capacity of the site - due to its central location - to function as a unifying element or field through generating out of the site's ground a 'design surface' or a 'surface of action'⁹⁷ driven by the concept of 'superimposition' allowing for multiplicity and variation of sensory, visual, and physical experiences to take place in the same continuum.

In order to achieve contextual continuity, I have undertaken the following operations:

1. Introduce a field or a surface of design on the site and create an overlap between the field and the existing natural and the urban conditions. This proposed field would contain movement, services and functions and serve as a connective tissue between the various contextual and programmatic elements.
2. Adjust the field to match the physical boundary of the proposed site.
3. Engage the field physically with the natural element.
4. Fold the field on the west side. This step would create a means of perception and expose a visual relationship with downtown Burlington making it visually part of the site. This step is a move towards the dissolution of boundaries and the assertion of the relational field - or a field of continuity - in which its effects exceed its immediate physical boundaries. Another effect taking place in this step is the introduction of a top surface and a subsurface which its orientation is driven by the axial position of the retail area of downtown Burlington.

⁹⁷ Semper's four elements of architecture

5. The existing change of direction in the Lakeshore Road on the east side created a condition of discontinuity between the residential and the commercial area. By using the principle of 'smoothness' and folding the field upwards on the east side of the site, a visual connection is created as a result, providing a meaningful physical transformation and transition of zones, and evolving the 'field of action' into a 'field of perception'. This vertical surface also creates a gateway condition for downtown Burlington which provides the context with an experiential condition of perception. I think this step resembles to some extent what Spuybroek refers to as the short-circuiting of action-perception-construction as the essence of architecture of continuity⁹⁸.
6. Twist the vertical field into a horizontal plane on the south-east edge of the site to create a sense of transition and movement from urban to natural condition and create a new level engagement with the lake. The twisted plane creates a void in the plane and allows for movement to occur between the east and the west side of the surface forging a path and an effective visual and physical link between the residential area and the Waterfront Trail.
7. Introduce a physical transition between the two levels of the field to create a continuous flow of movement between different field conditions.
8. Introduce a horizontal platform below the transitional surfaces zone, which creates a private local specificity on the lake edge strengthening the level of engagement with the sensorial qualities of the natural condition.
9. Extend the field into the lake to create an area for multi-seasonal recreational activities - such as swimming and skating - associated with the natural condition.
10. Repeat the field extension into the lake on the south west side of the site and introduce a platform central to the adjacent hotels on the west side which serves as a platform for passive recreation.
11. Establish internal continuity within the local surface by connecting indoor and outdoor field conditions together.
12. Re-establish the continuity of flow and movement within the design surface by bridging over the physical gap created in the step above.

I believe the steps illustrated in this part of the design strategy engaged the site with the

⁹⁸ Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

contextual conditions and created a responsive and a projective relationship embracing a variety of conditions and generating a process of experiential continuity, a process described by Lars Spuybroek as plastic and topological, embracing the principles of continuity between movement and image as the original curve⁹⁹.

I also believe that this strategy will focus on a design process based on the order of integration of experience and context rather than an order of plan and extrusion; a process focused on exposing relationships between the various elements such that boundaries become part of the field and a means of perception.

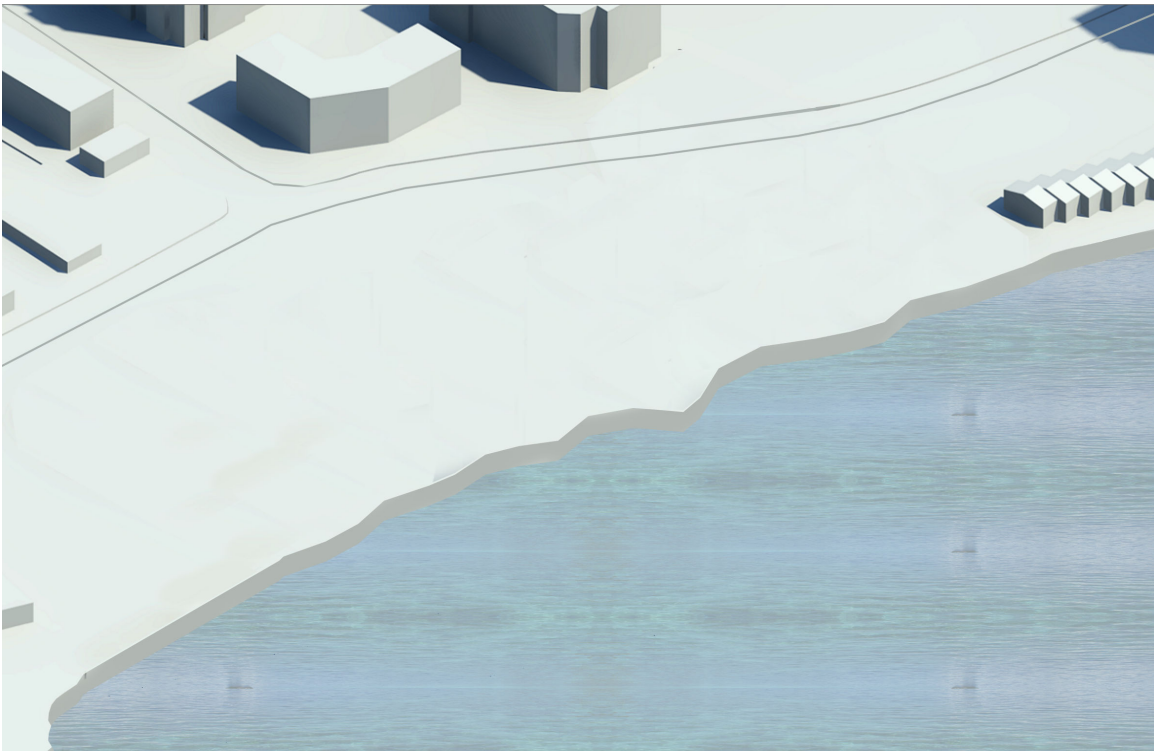


Figure 4.51: Site

⁹⁹ Ibid.

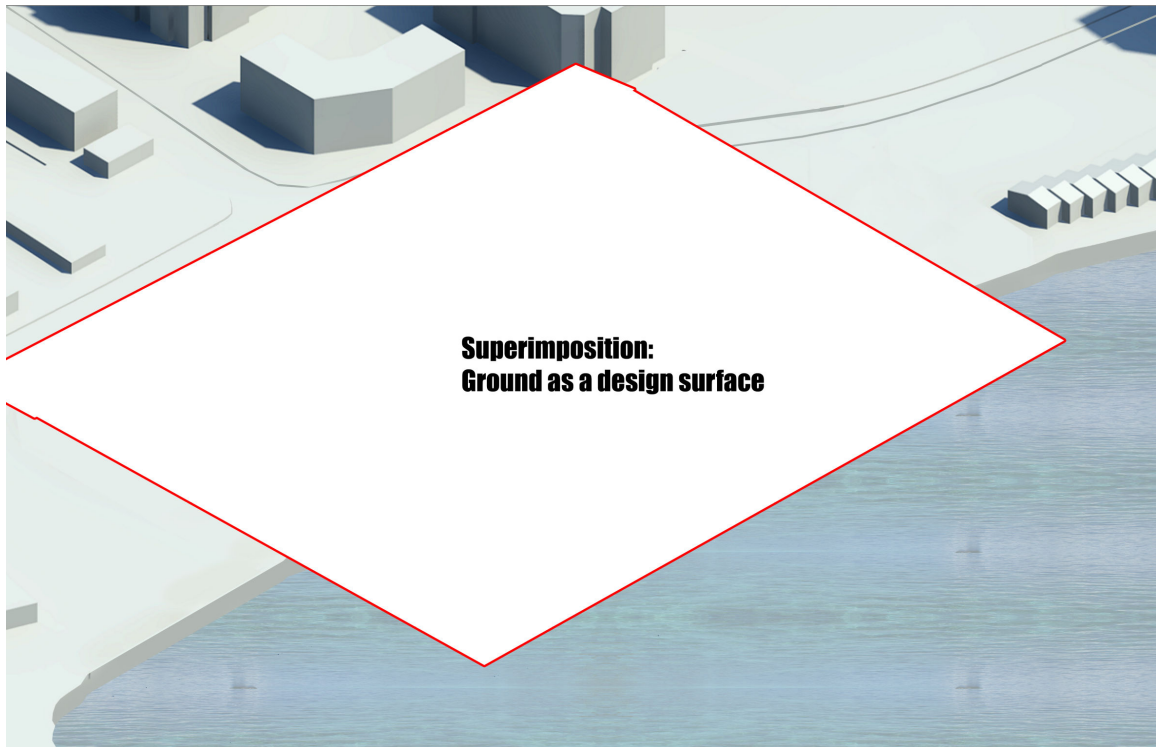


Figure 4.52: Step 1. Introduce a field or a surface of design

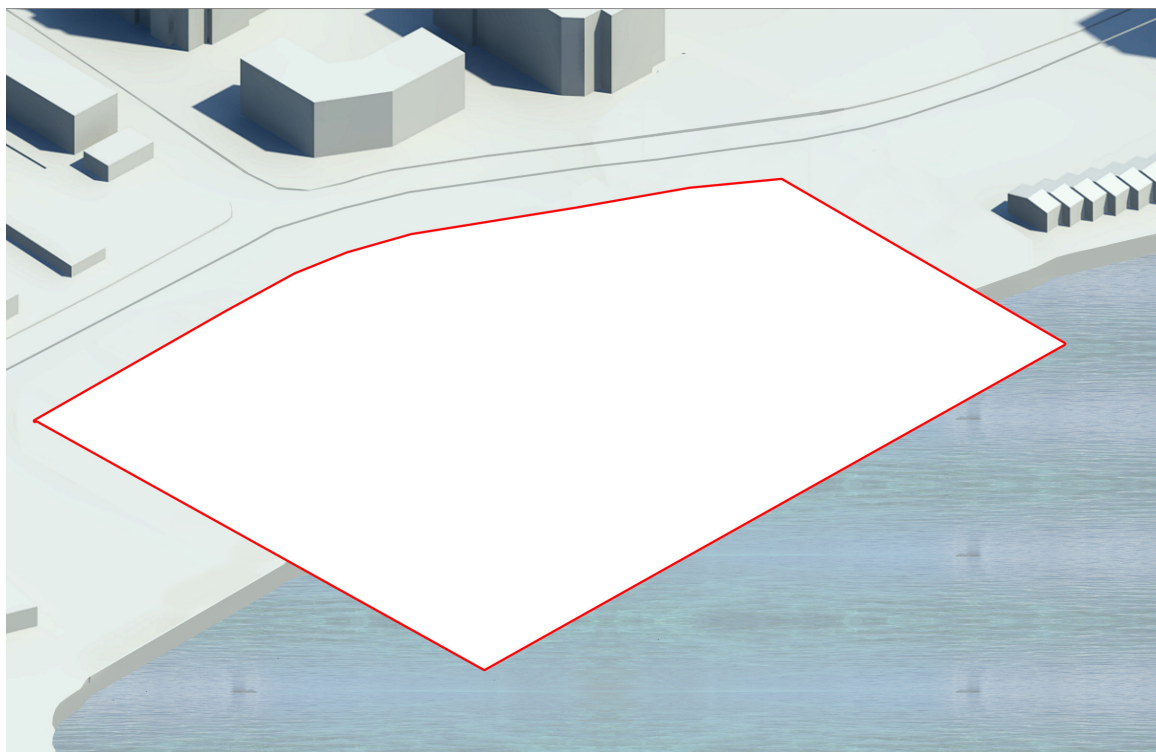


Figure 4.53: Step 2. Adjust the field to match the physical boundary of the proposed site

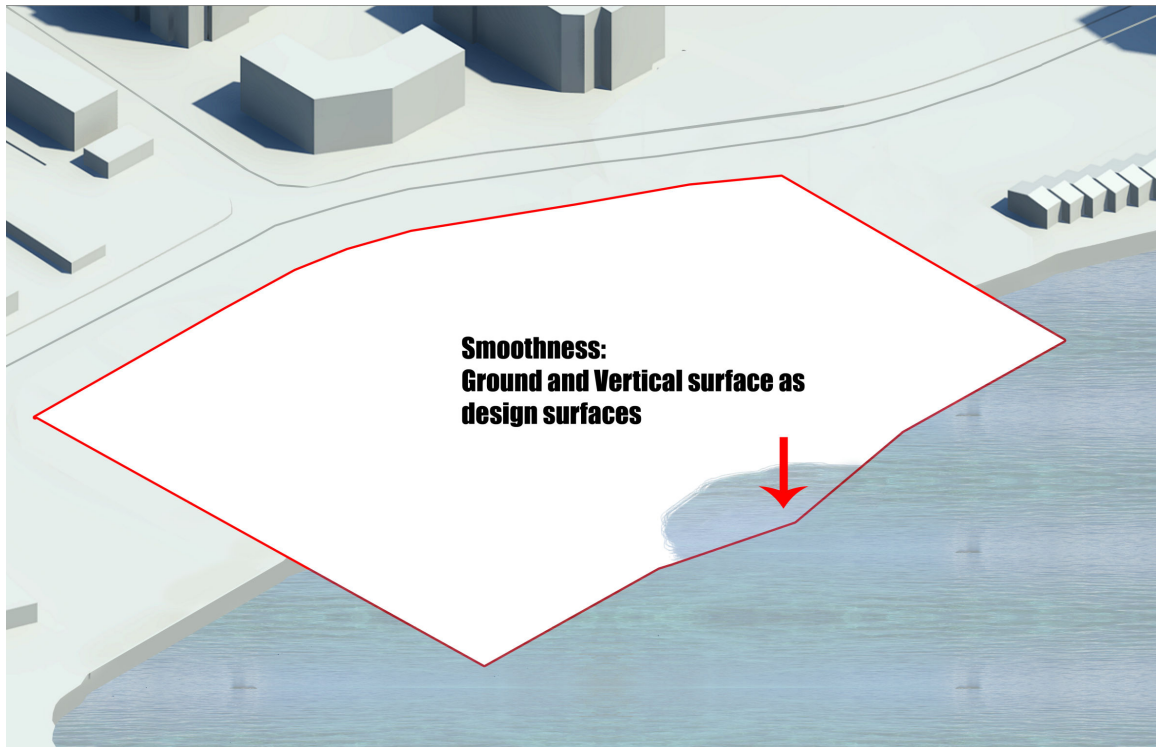


Figure 4.54: Step 3. Engage the field physically with the natural element

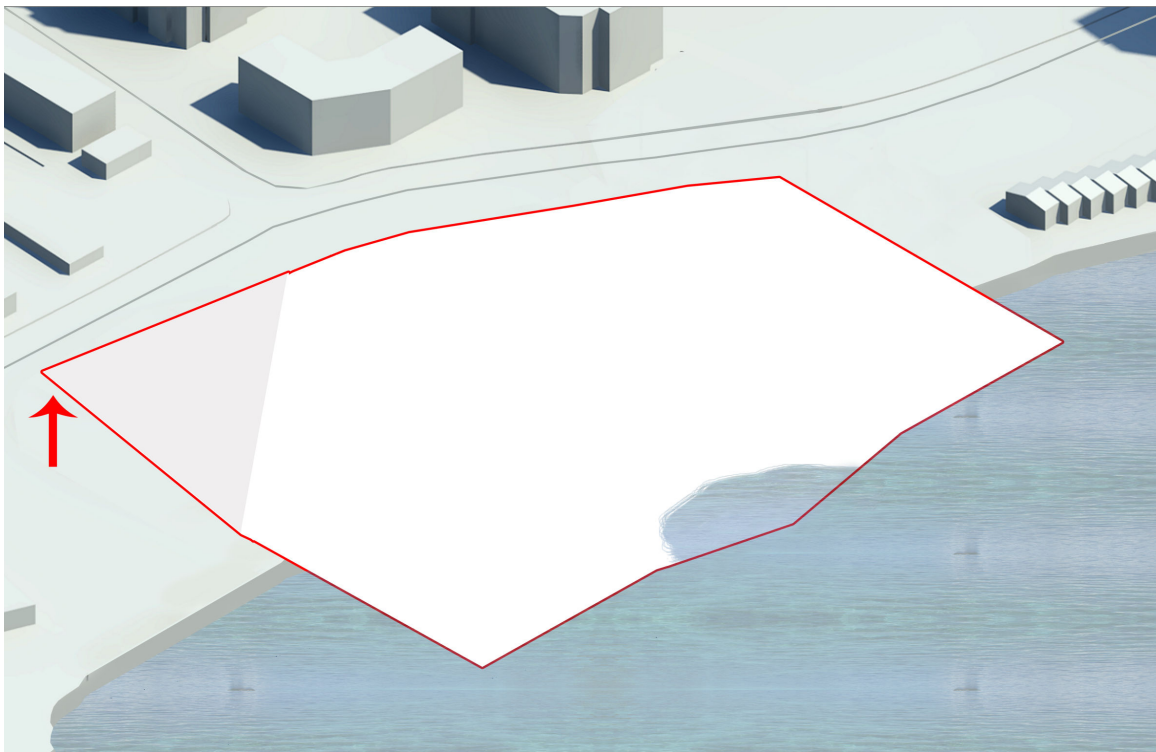


Figure 4.55: Step 4. Fold the field on the west side

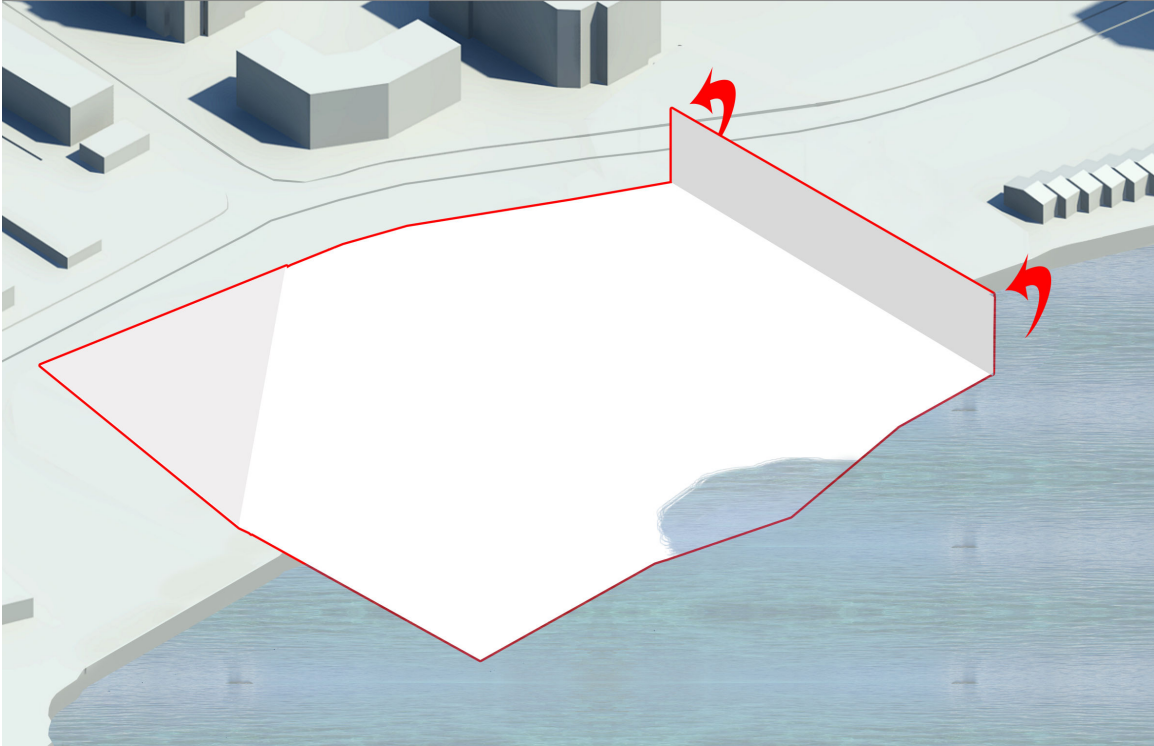


Figure 4.56: Step 5. Fold the field to create a gateway condition for downtown Burlington

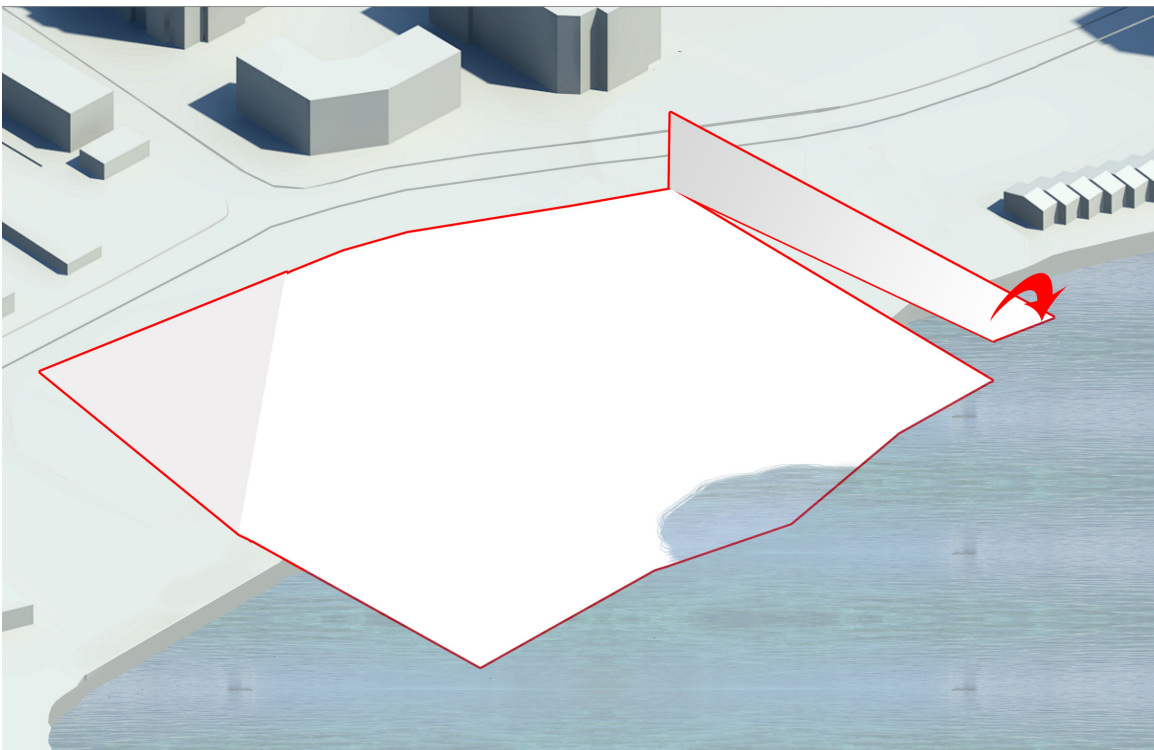


Figure 4.57: Step 6. Twist the vertical field into a horizontal plane on the south-east edge of the site to create a sense of transition and movement from urban to natural condition

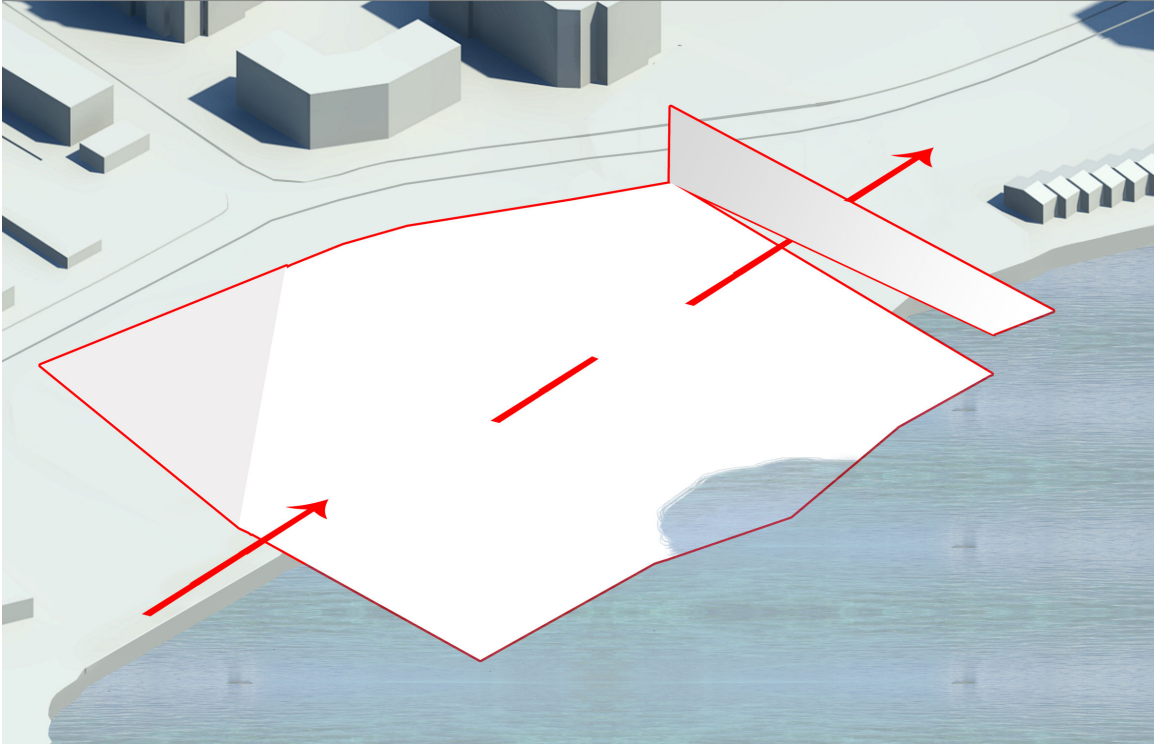


Figure 4.58: Step 6. The creation of physical and visual path between the residential area and the waterfront

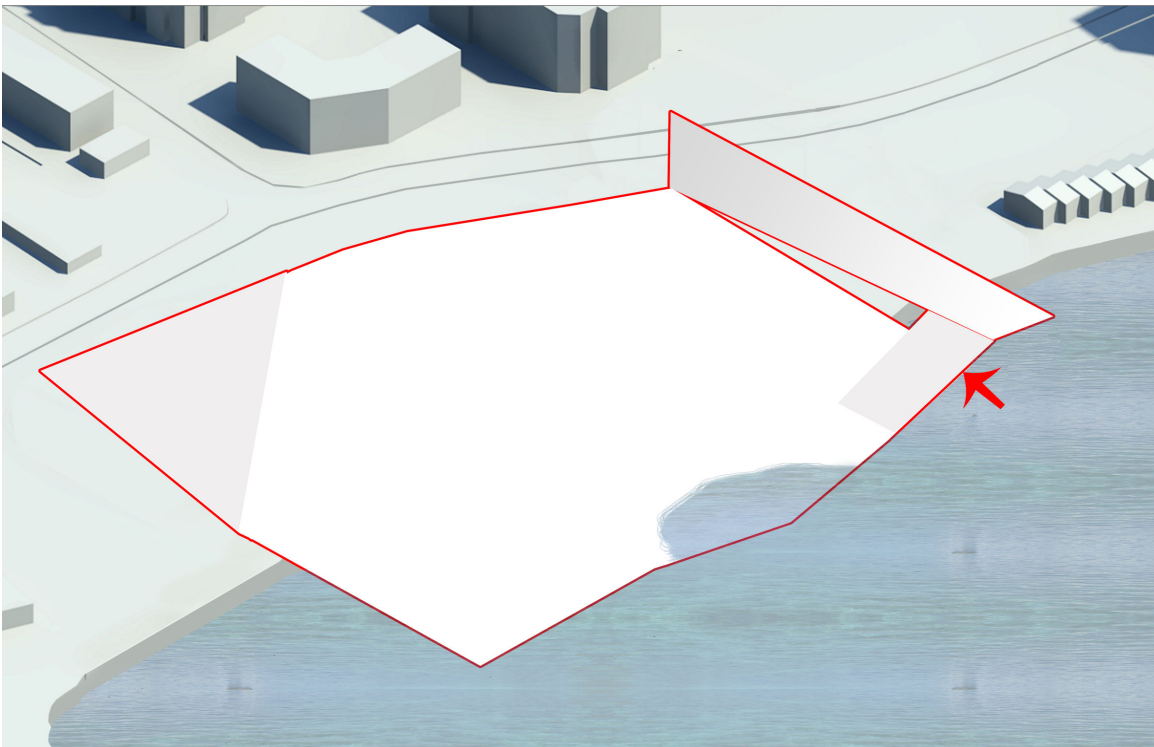


Figure 4.59: Step 7. Introduce a physical transition between the two levels of the field to create a continuous flow of movement

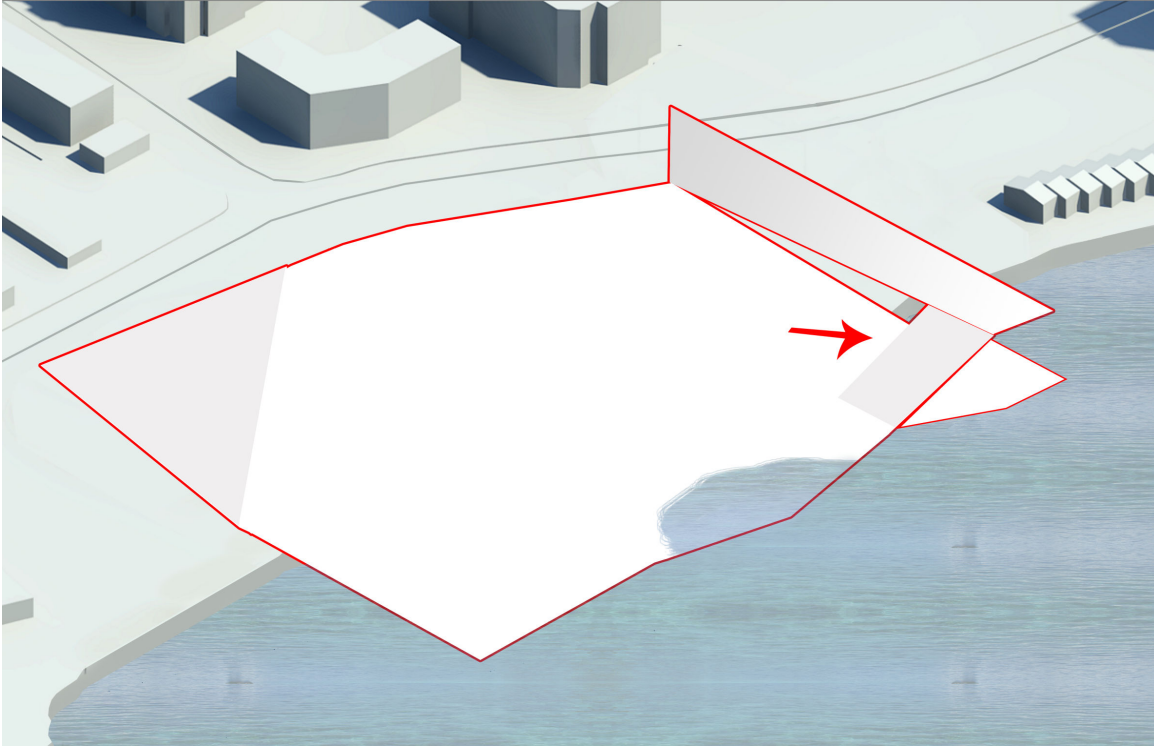


Figure 4.60: Step 8. Introduce a horizontal platform at the lake elevation level

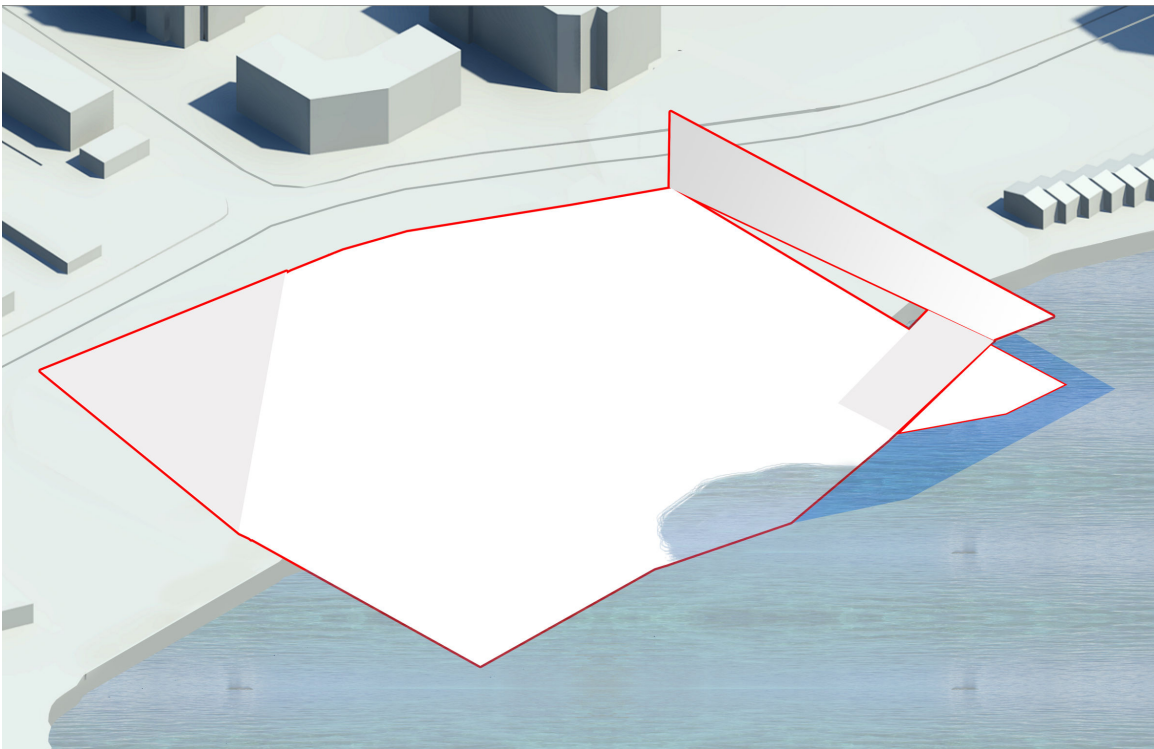


Figure 4.61: Step 9. Extend the field to create an area for recreational activities associated with the natural condition

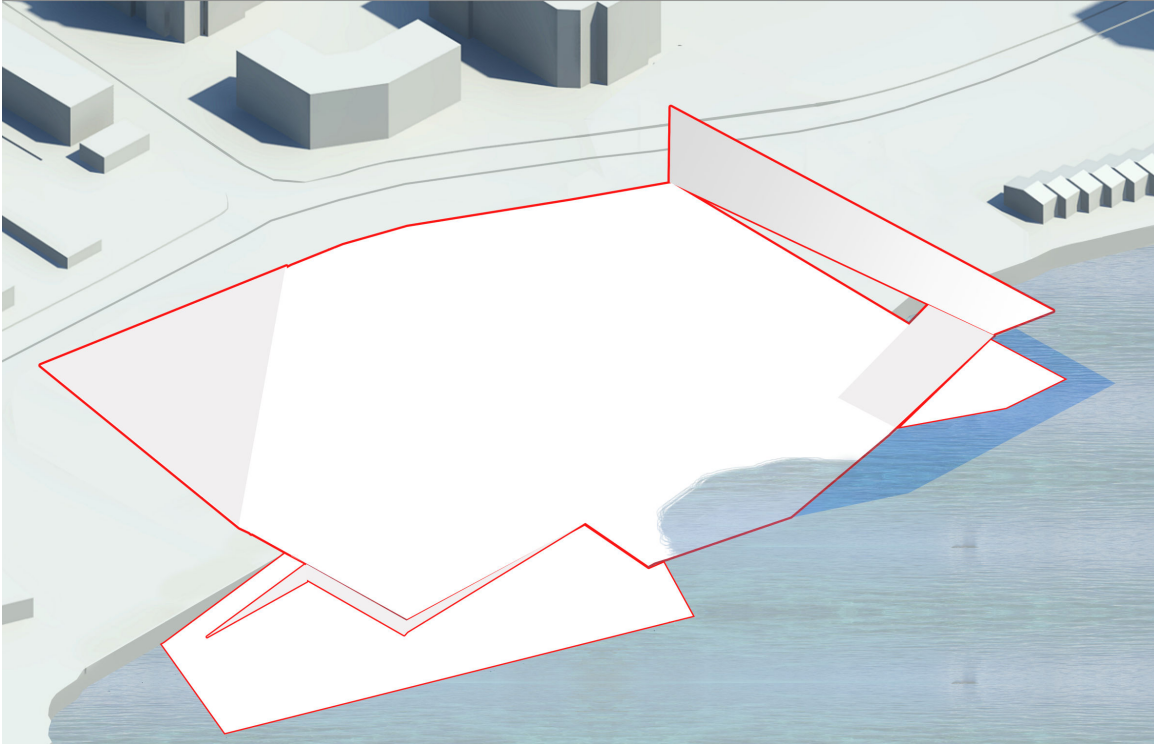


Figure 4.62: Step 10. Repeat the field extension into the lake to introduce a platform central to the adjacent hotels on the west side

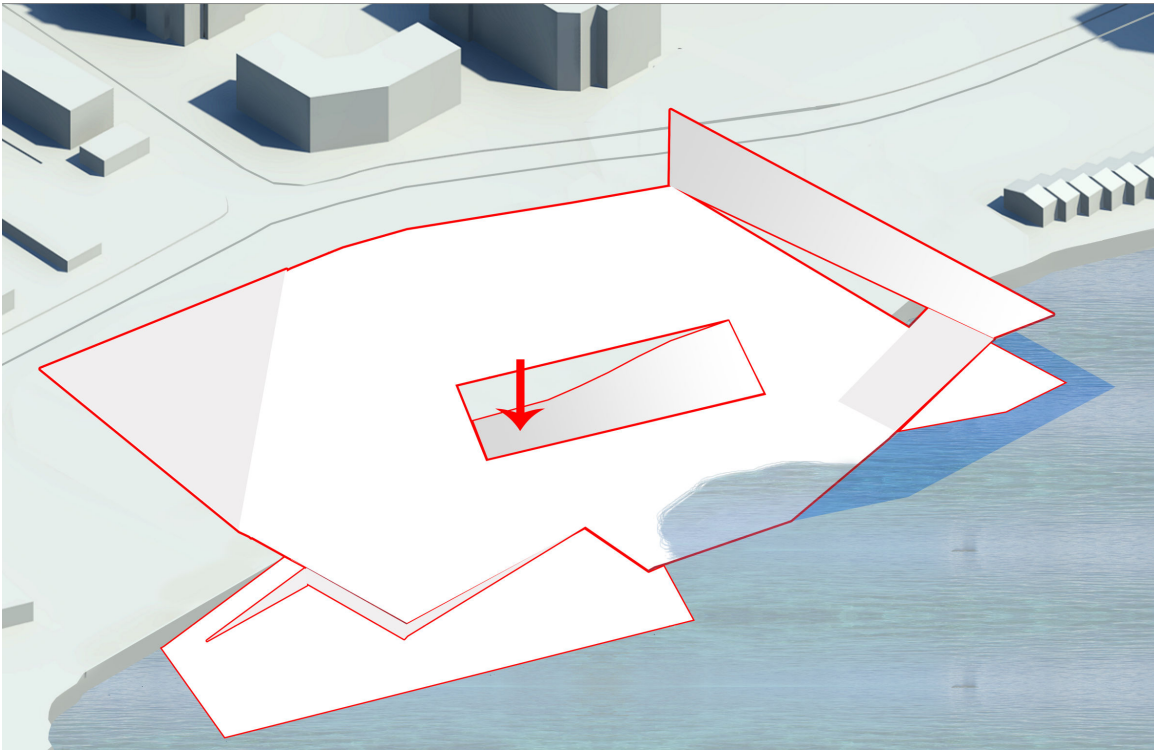


Figure 4.63: Step 11. Establish internal continuity within the local surface by connecting indoor and outdoor field conditions together

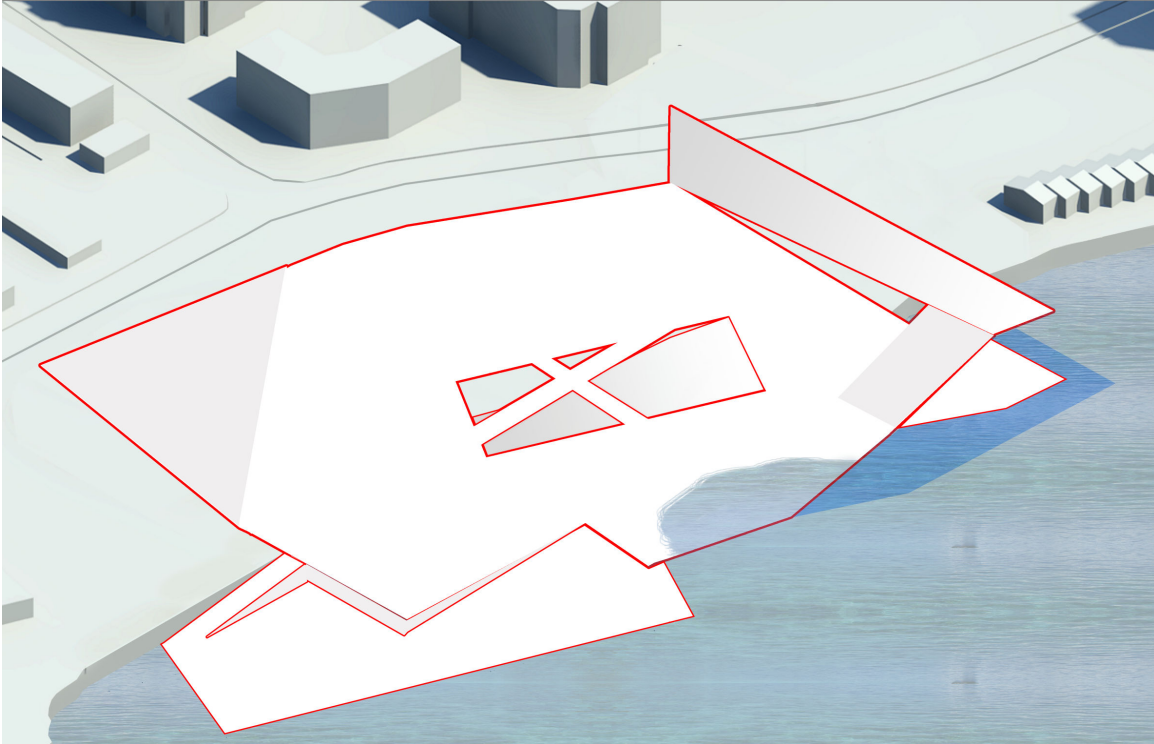


Figure 4.64: Step 12. Re-establish the continuity of flow and movement within the design surface

The diagrams below summarize the steps of creating the relational field and represent the idea of utilizing both sides of the design surface, which I think renders the design surface or the field as an architectural armature of three dimensional qualities with the capacity to serve as a ground - a surface of action -, a wall - a surface of perception - and a ceiling.



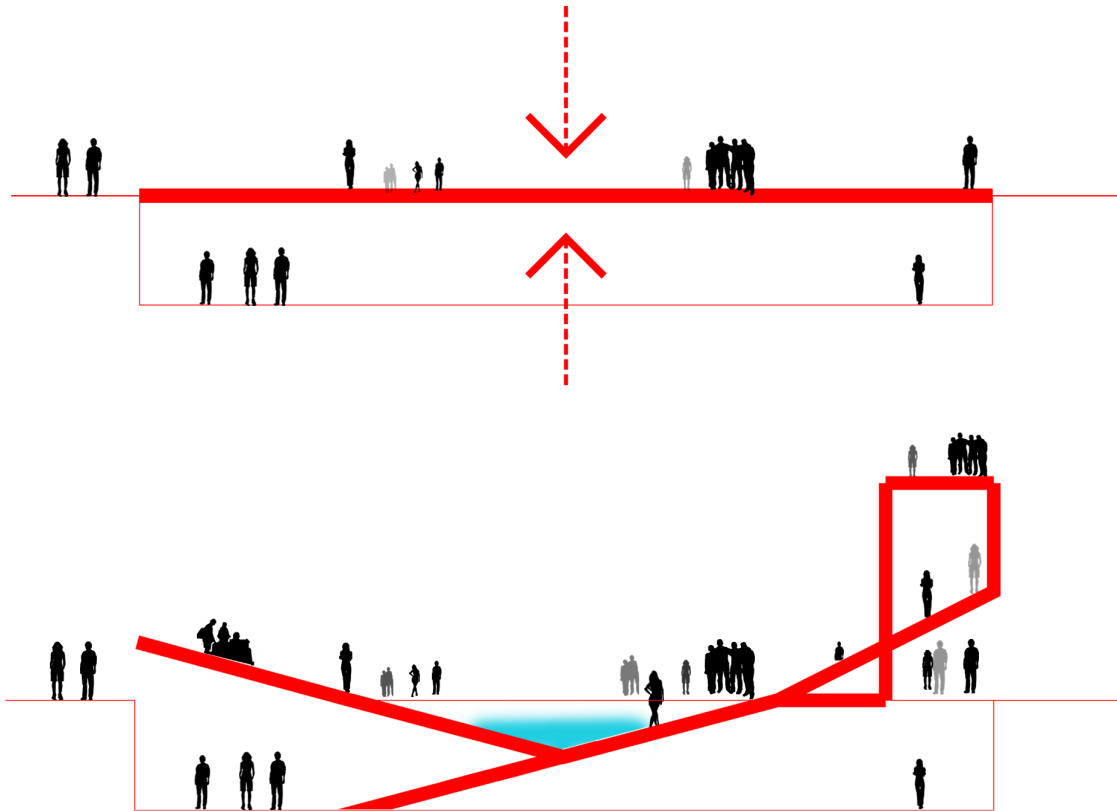


Figure 4.65: Opportunity to utilize both sides of the 'design surface'

Part 3. Programmatic Continuity

The proposed program is driven by the demographic factors and the social mandate established in chapters 1 and 2, and is also based on the contextual survey of existing services and infrastructure and its capacity to respond to the needs of the elderly.

The program components - retail, wellness and cultural - represent a variety of characteristics that are passive, active and intergenerational and also represent an extension of the contextual program and activities.

By examining the complexity of the program in relation to the surface operations addressed above, a certain opportunity for program integration within the design surface emerges, where a range of possible events activate the site. This proposed program

integration is illustrated in the following steps:

1. Place each program component in relation to the context as an extension of the adjacent activities, making the context a tool for program and functional distribution.
2. Increase the level of integration between each program, where each component can have a direct relationship and adjacency with the other components.
3. Increase the intensity and concentration of each component in relation to its existing context, where the retail component is more concentrated in the west side adjacent to downtown Burlington, and the cultural component is concentrated in the residential area and the gateway condition, and finally the wellness component is concentrated in the area closest to the lake and the natural conditions.
4. The final step is a representation of intensified integration of programs as a suggestion for an opportunity for expressive overlap where architecture drives the influence of one program onto the other creating an experience of 'accidental space', 'openness of action' and of 'third activity' which would instigate an experience of free action, play and experiment.



Figure 4.66: Step 1. Program Integration

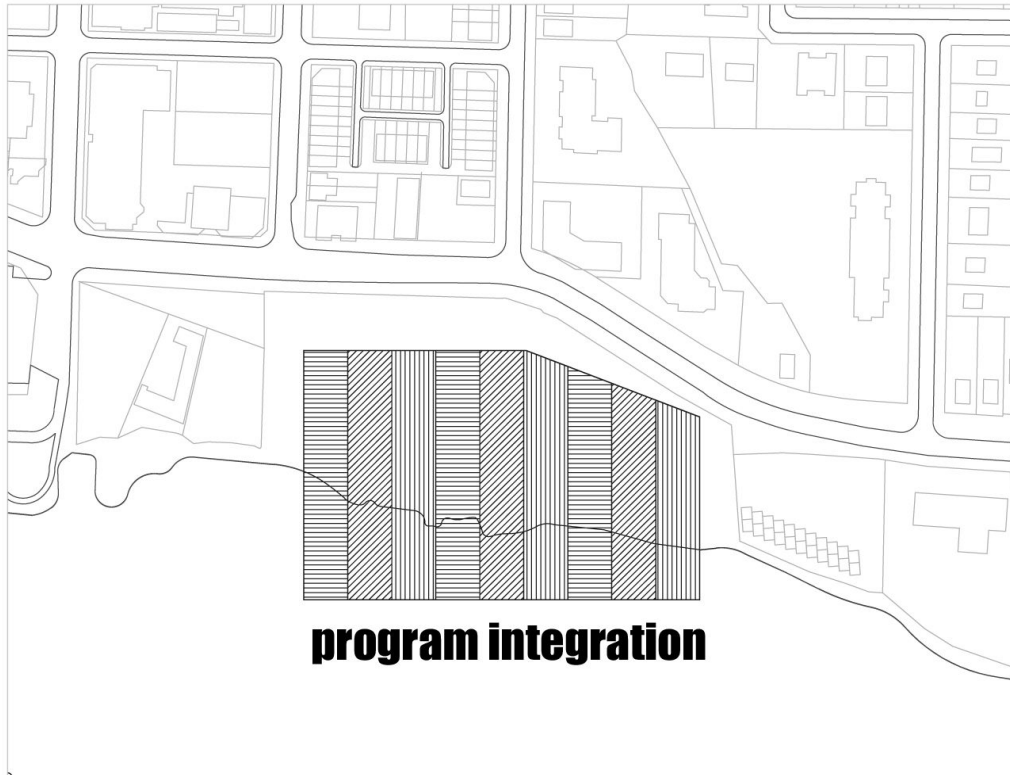


Figure 4.67: Step 2. Increased level of integration

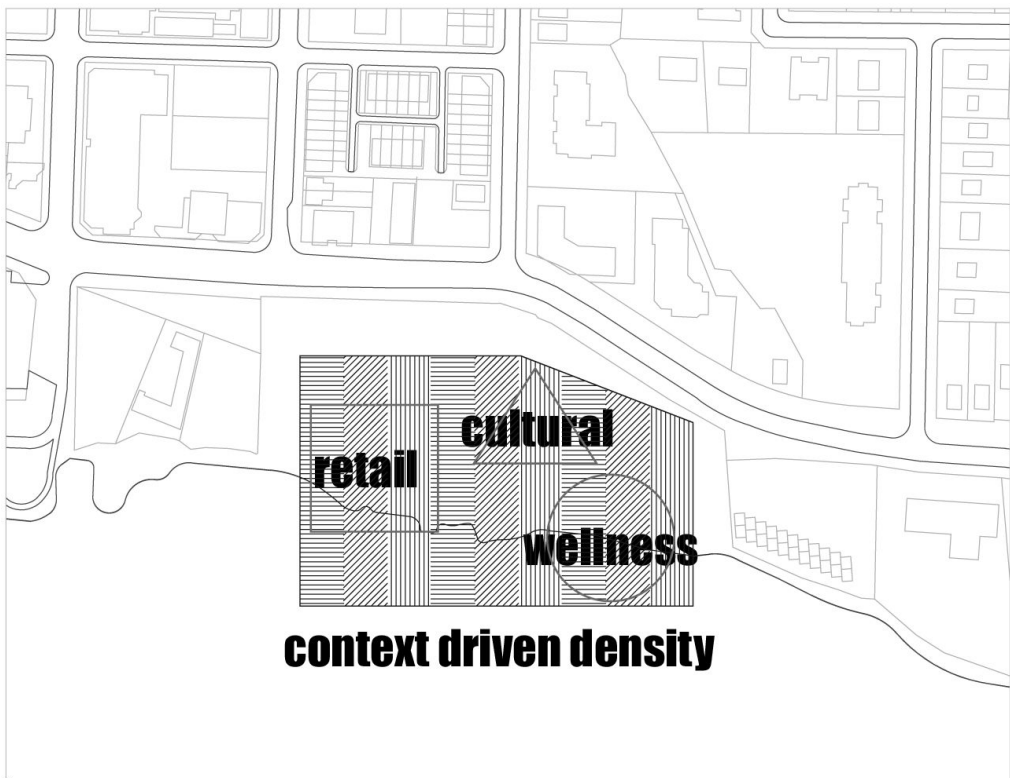


Figure 4.68: Step 3. Increase intensity of program in relation to the existing contextual conditions

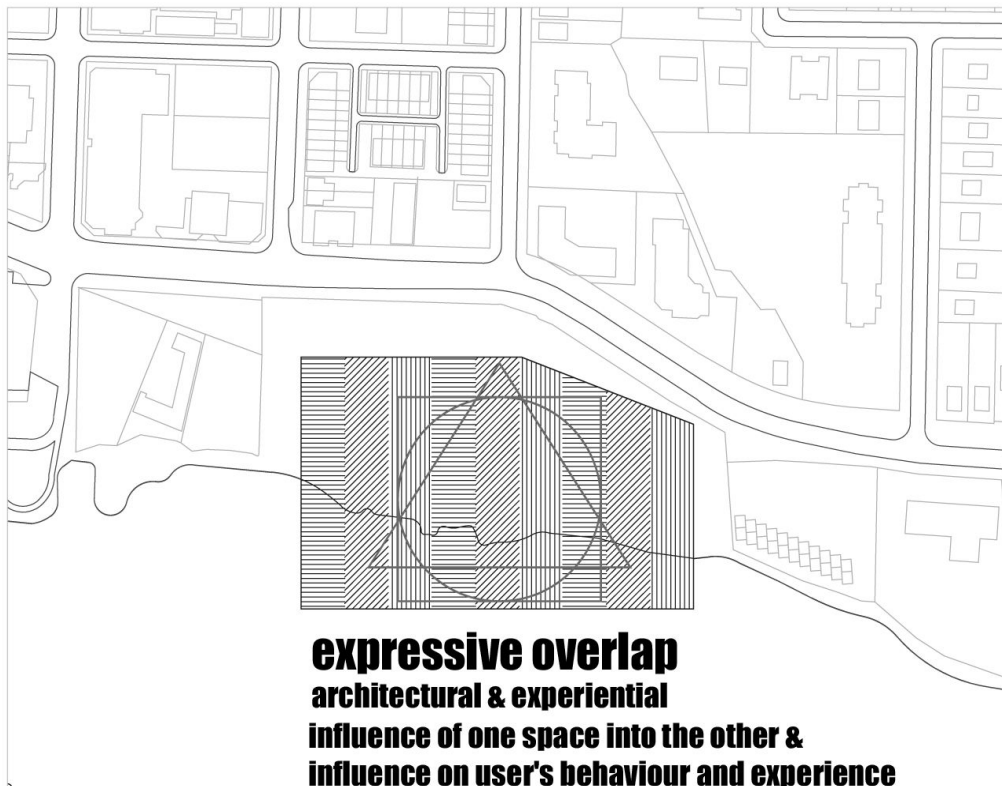


Figure 4.69: Step 4. Expressive overlap

This level of program integration will provide the user with freedom of action and inspire an architecture of experience predicated on user engagement and continuity of action and perception, and will focus architecturally on the design of the space and the place of each component. It will also put emphasis on the design of the space between those components by considering 'ground' as a 'design surface' and as an 'organizational surface'.

In *The Practice of Everyday Life*, Michael de Certeau defines the in-between spatial condition as a territorial space "of the shifting and the precarious; fundamentally, it is the locus of route and passage"¹⁰⁰ and goes on to define in-between space as "a place that is put into practice. The street is geographically defined by urban planners but transformed into an actual space by those who walk along it...space is the producer of the operations which decide its orientation, its circumstances; which make it a temporal

¹⁰⁰ de Certeau, Michel [*The Practice of Everyday Life*], California, University of California Press, 1984

setting and cause it to function as a polyvalent unity of conflicting projects of action or of negotiated juxtapositions.”¹⁰¹

SECTION - IV - PROJECT LAYOUT

This section describes the architectural design proposal, which is an implementation of the proposed tectonic, contextual and programmatic design framework through the following project components:

Part 1. Retail

This component and its related activity(s) are intensified on the north-west edge of the site as an extension of the commercial zone of downtown Burlington. This part of the site includes a heritage property listed under the Ontario Heritage Act (OHA), which is important to keep not only for required preservation purposes but for it to function as a tool to inspire a design experiment with temporal continuity.

There are three other heritage properties on the site that are not listed under OHA, which I plan to demolish but refer to in as demarcation tools. The heritage properties together are oriented along a skewed gridline at approximately 22 degrees, parallel with the axis linking the downtown area with the site.

The skewed gridline generated by the axis of the heritage properties is superimposed with a local grid generated by the orientation of the adjacent context; together they provide an organizational system with the capacity to respond to two different urban structural conditions. The next step is to introduce a layer of retail blocks - solid and void volumes - onto the grid system in continuity with the existing retail blocks of downtown Burlington in terms of urban orientation and scale.

¹⁰¹ Ibid.

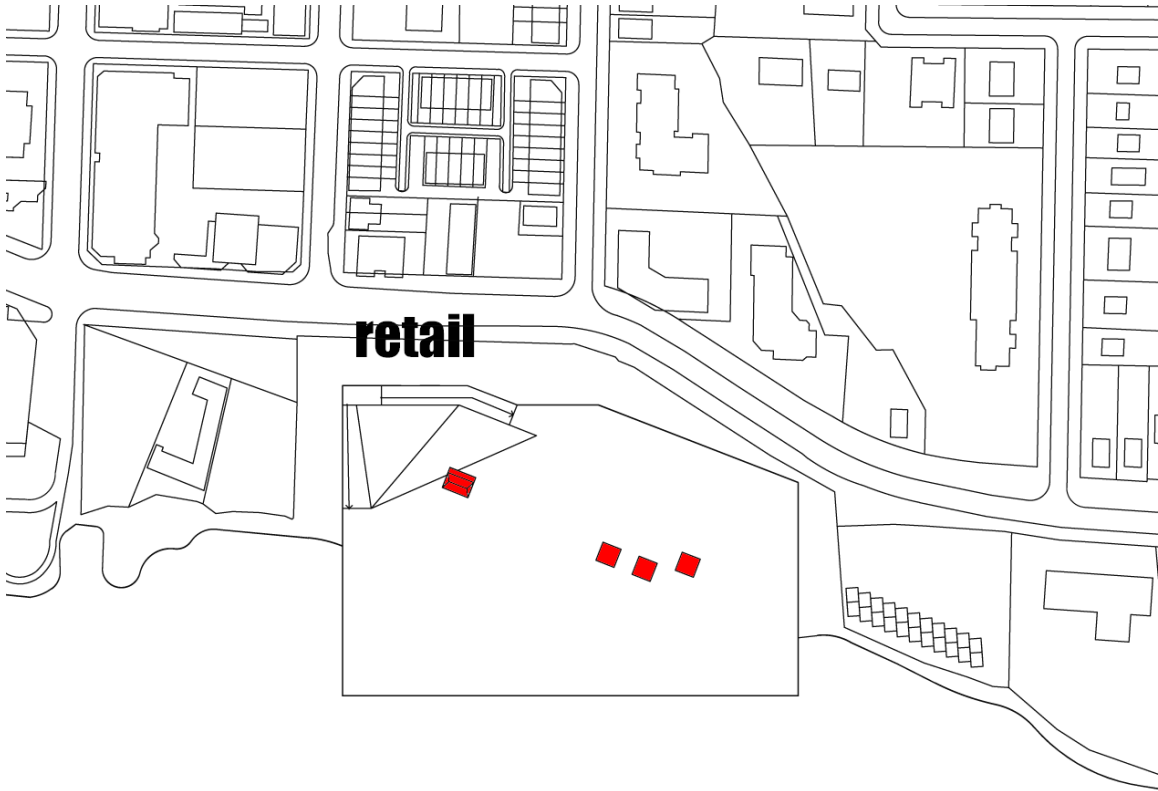


Figure 4.70: Heritage Properties



Figure 4.71: Retail blocks and grid superimposition

The tectonic integration of the retail blocks and the raised field create an opportunity to activate a condition of continuity between the top surface and the subsurface and between interior and exterior spaces through the creation of a variety of spaces hosting a variety of activities. Some of these spaces provide physical and visual transition between interior and exterior spaces creating nodes and reference points, other spaces function as organizational structures in support of social organization such as courtyards, terraces and skylights.

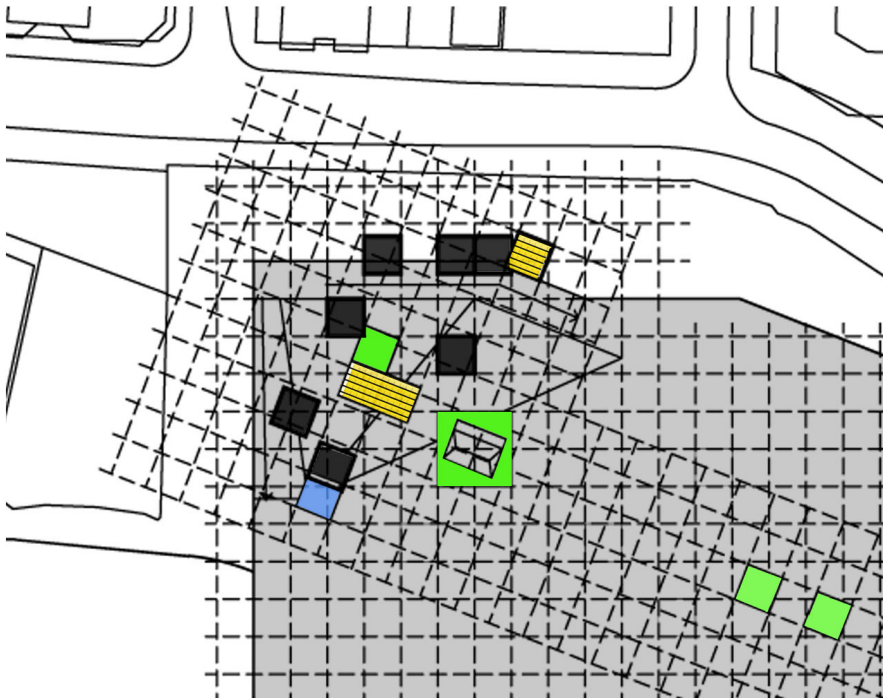


Figure 4.72: Retail blocks and outdoor elements

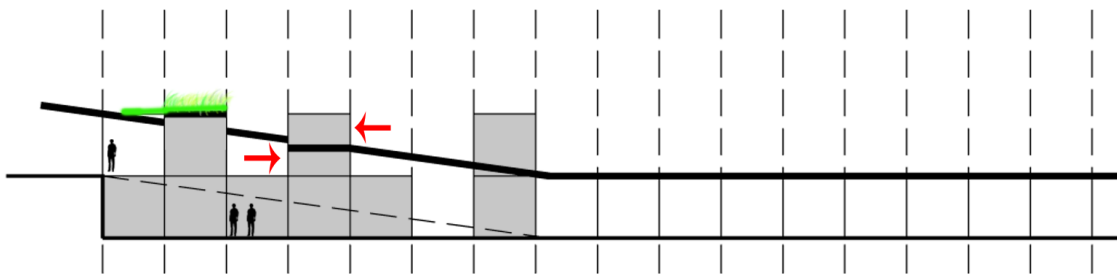


Figure 4.73: Retail section / transition areas/ blocks configurations

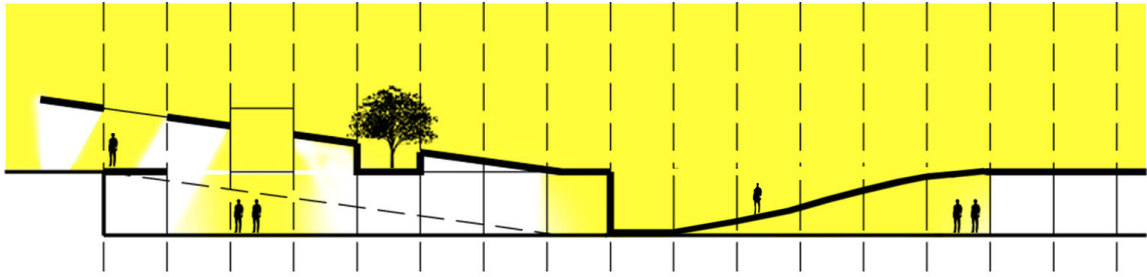


Figure 4.74: Retail section / outdoor-indoor areas/ access to daylight / blocks configurations

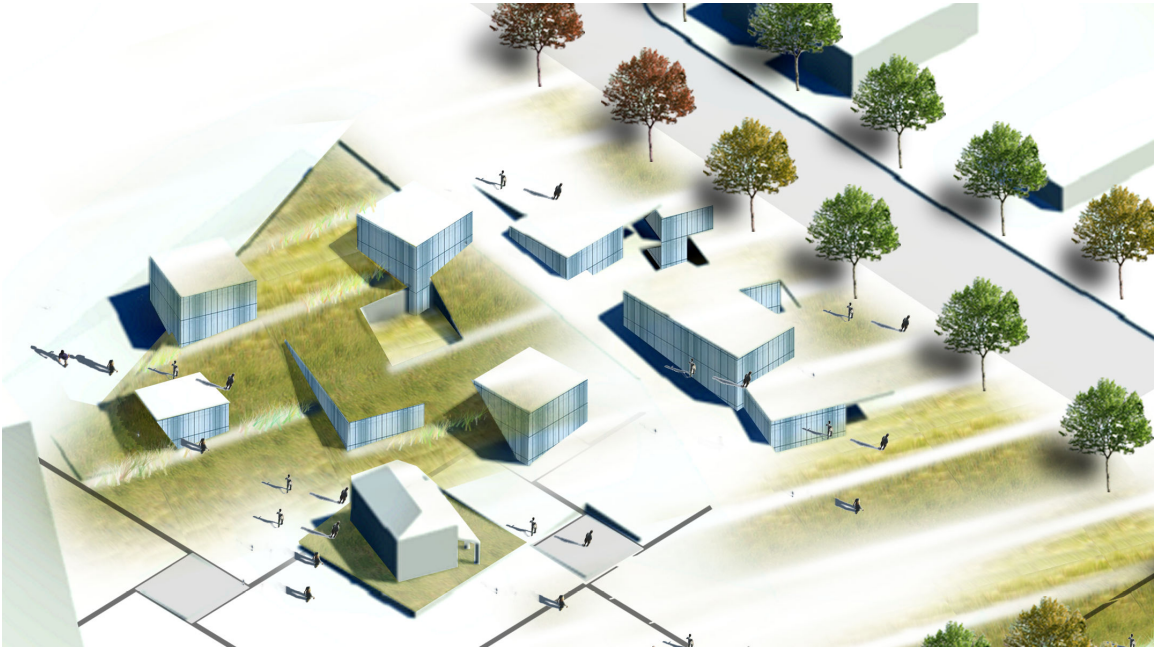


Figure 4.75: Retail bird's eye view

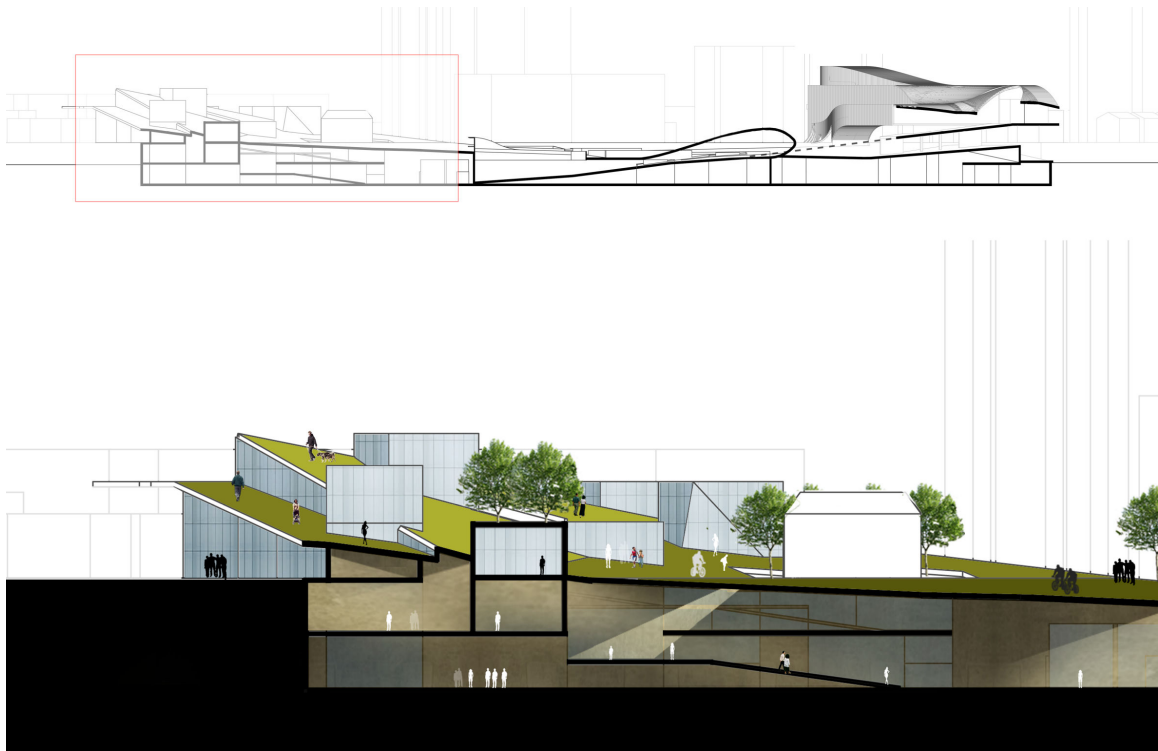


Figure 4.76: Retail East-West section (1)

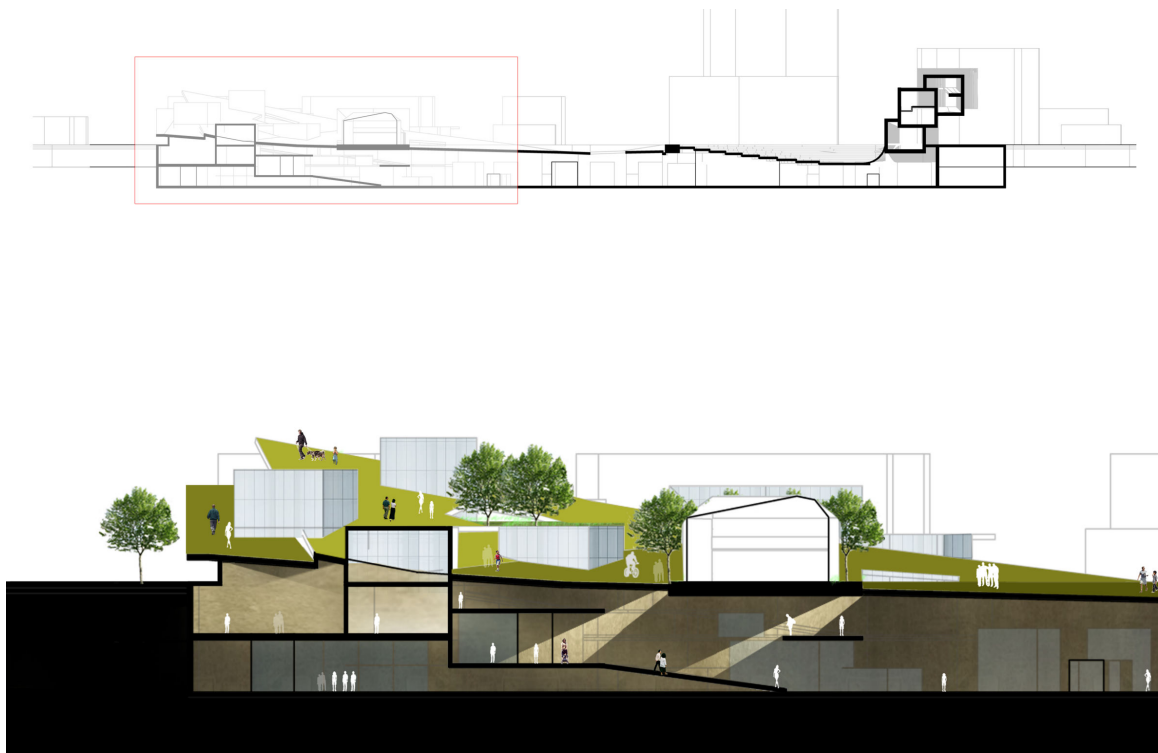


Figure 4.77: Retail East-West section (2)

Part 2. The Subsurface

The creation of the subsurface came as a result of the desire to maximize the potential of the field - the design surface - by utilizing both sides of the surface, internal and external. The subsurface as a spatial element contains three program components - retail, wellness and commercial - within a single field implementing the design strategy of programmatic continuity. The raised field on the north west side functions in this context as gesture for entry, forming an access route and a circulation zone along the skewed axis generated by the heritage properties.

The central circulation zone also provides a connection between the subsurface and the external surface through an outdoor plaza gradually sloping up towards the upper surface. Along with serving as a connective tissue between inside and outside, this plaza forms a condition which Spuybroek calls a structure of vagueness¹⁰²; programmatically it is the creation of opportunity without determining the function, a third place with a multipurpose quality.

The superimposition of the two grid systems created an opportunity to introduce a variety of spaces with different sizes, approach and use. The organization of these spaces suggest a porous interconnectivity and continuous flow through a variety of programs.

¹⁰² Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

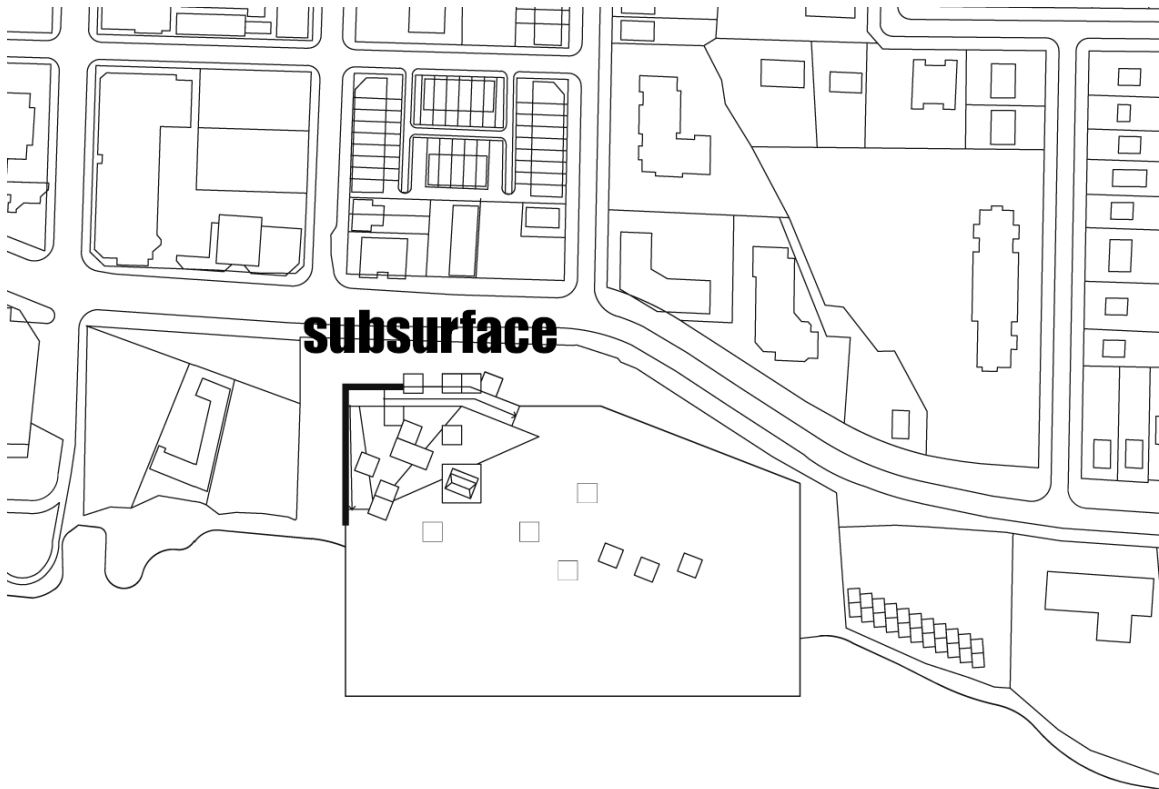


Figure 4.78: subsurface entry



Figure 4.79: Subsurface circulation zone and program distribution

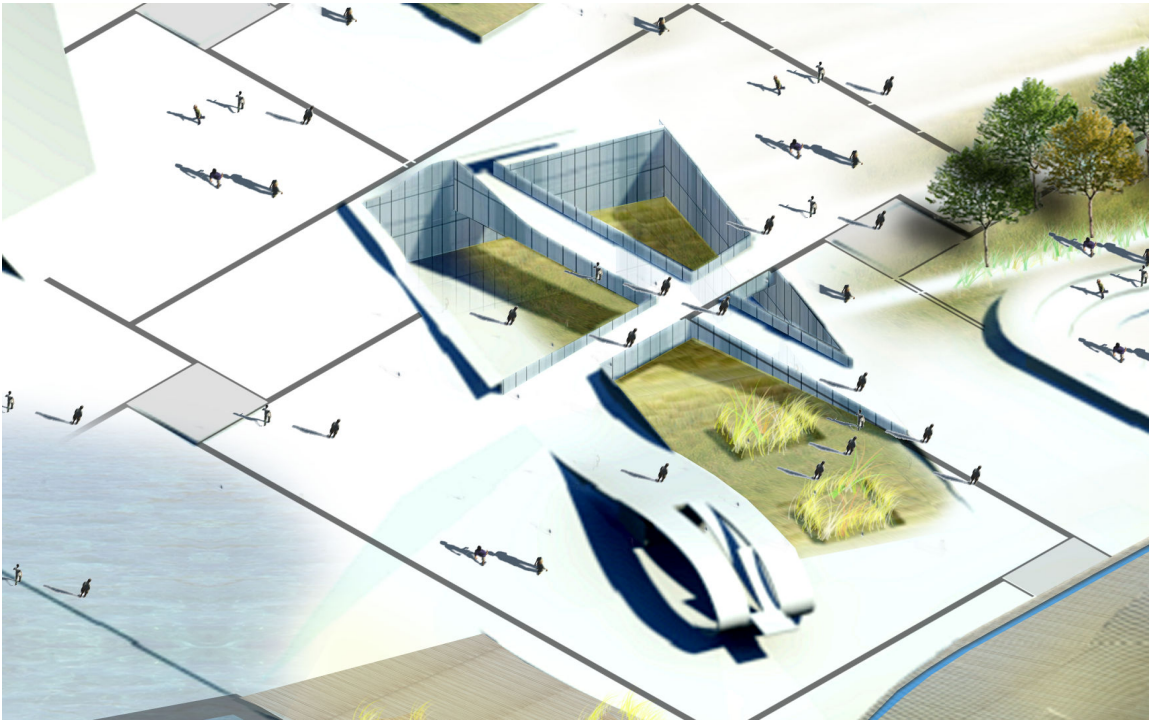


Figure 4.80: Central plaza bird's eye view



Figure 4.81: Central plaza perspective

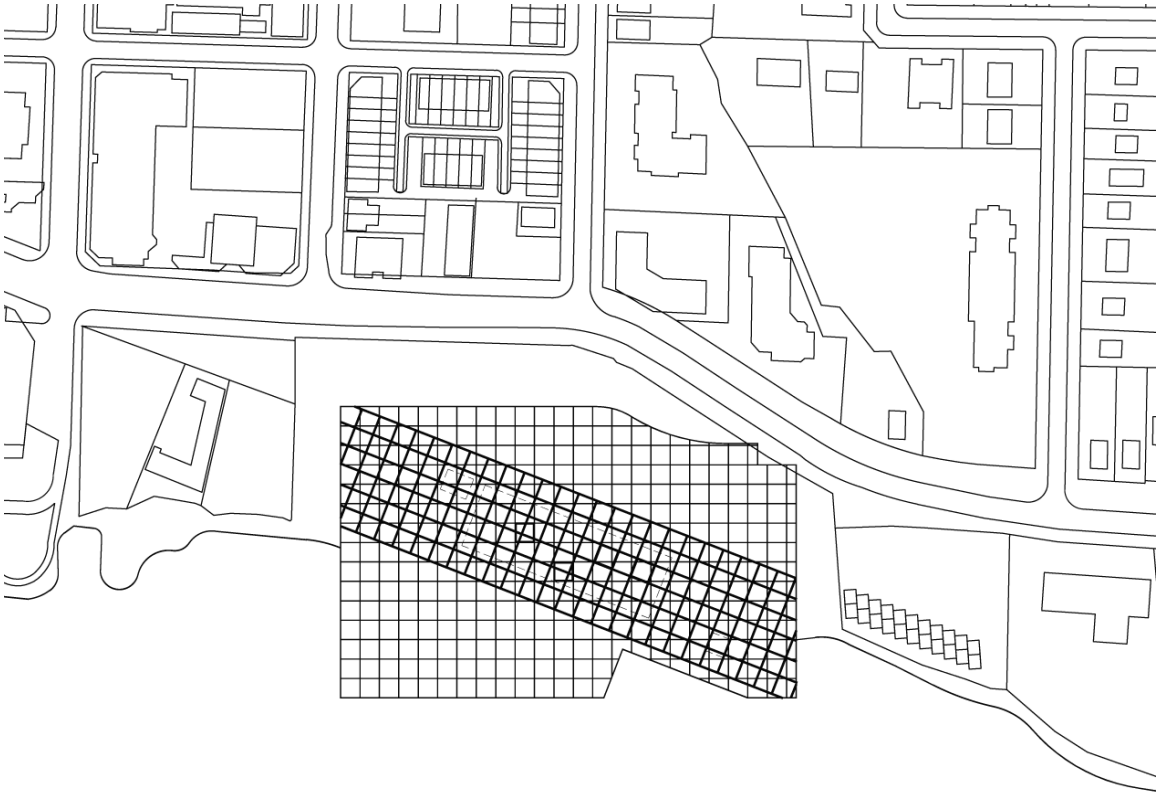


Figure 4.82: Grid superimposition

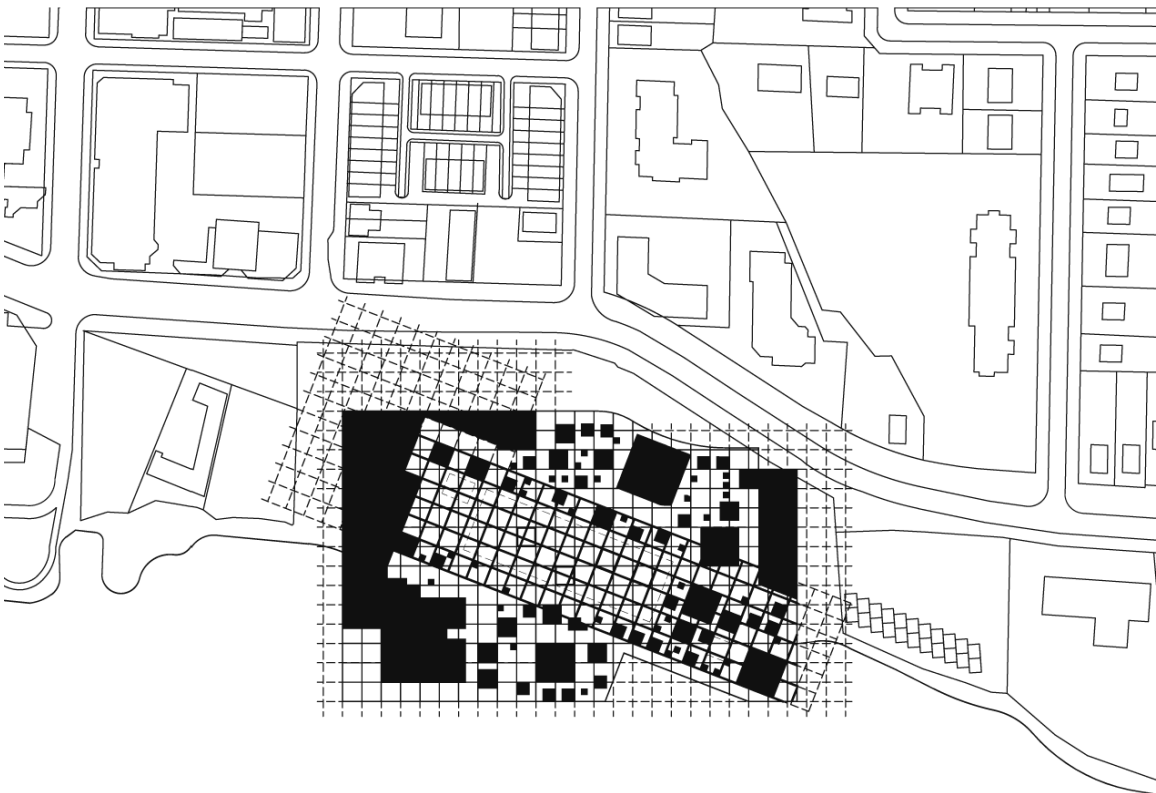


Figure 4.83: Subsurface grid superimposition and space allocation

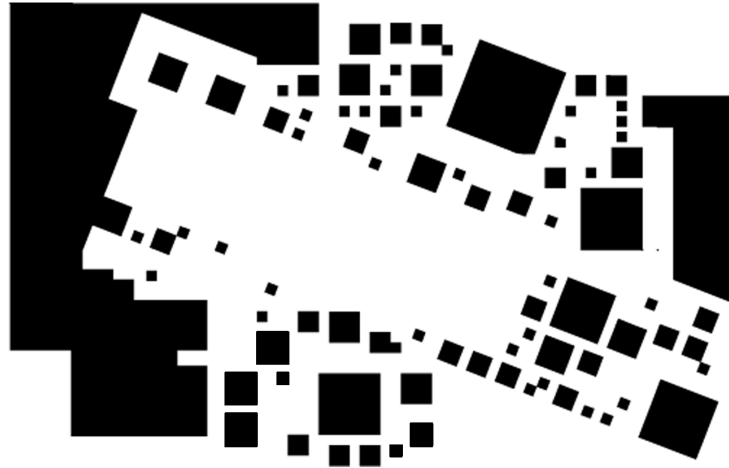


Figure 4.84: Subsurface space allocation

This type of organization established internal continuity and integration of program. However, it worked against the Universal Design principles of ‘intuitive design’ and ‘perceptible information’ to a certain degree. So, after a number of design alterations I found that by introducing a level of discontinuity in term of physical organization on a grid system by shifting the circulation path of a certain program component one module on the vertical dimension, an order of perception and visual continuity is created, where the user can visually link himself or herself to other functions while he or she physically occupies another function.

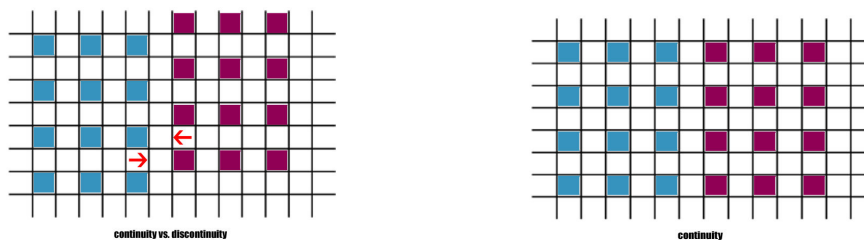


Figure 4.85: Program continuity vs. discontinuity

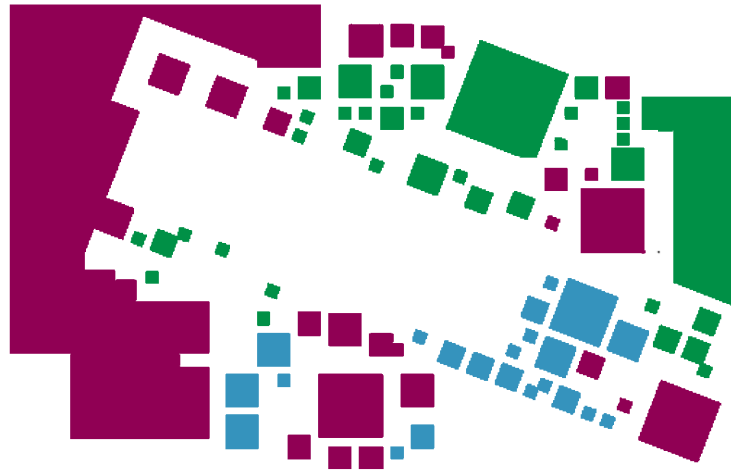


Figure 4.86: Program distribution (Retail, Cultural and Wellness)

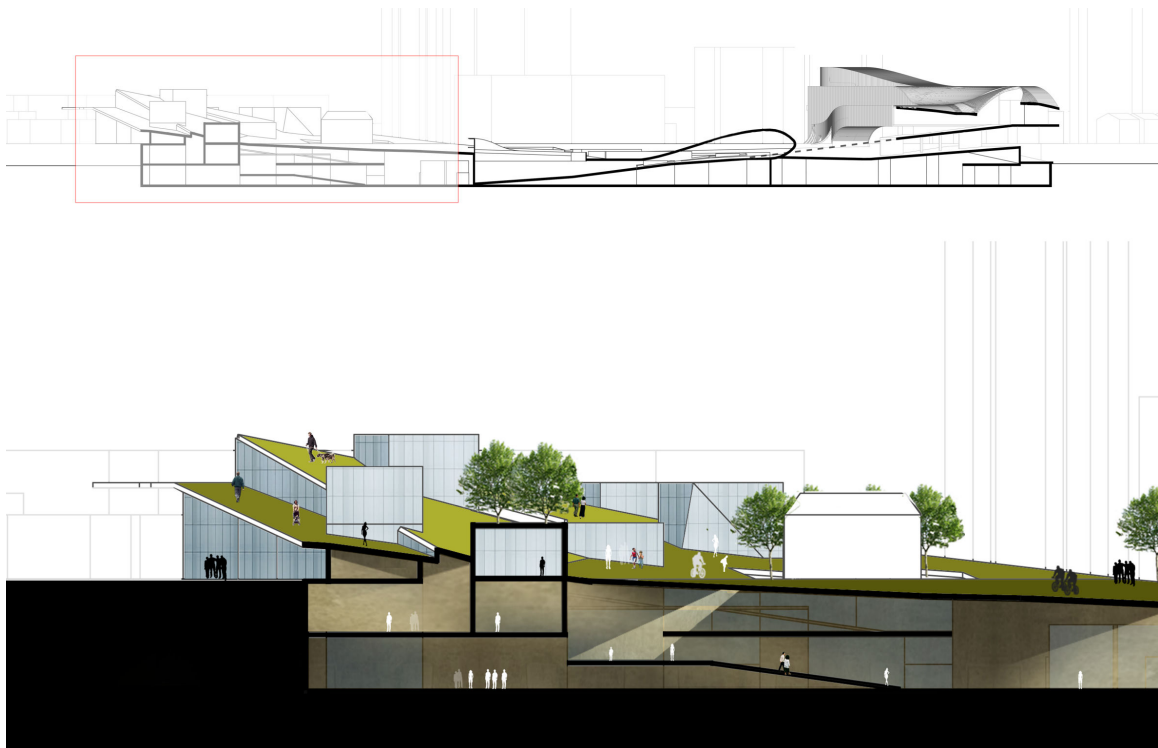


Figure 4.87: Subsurface East-West section (1)

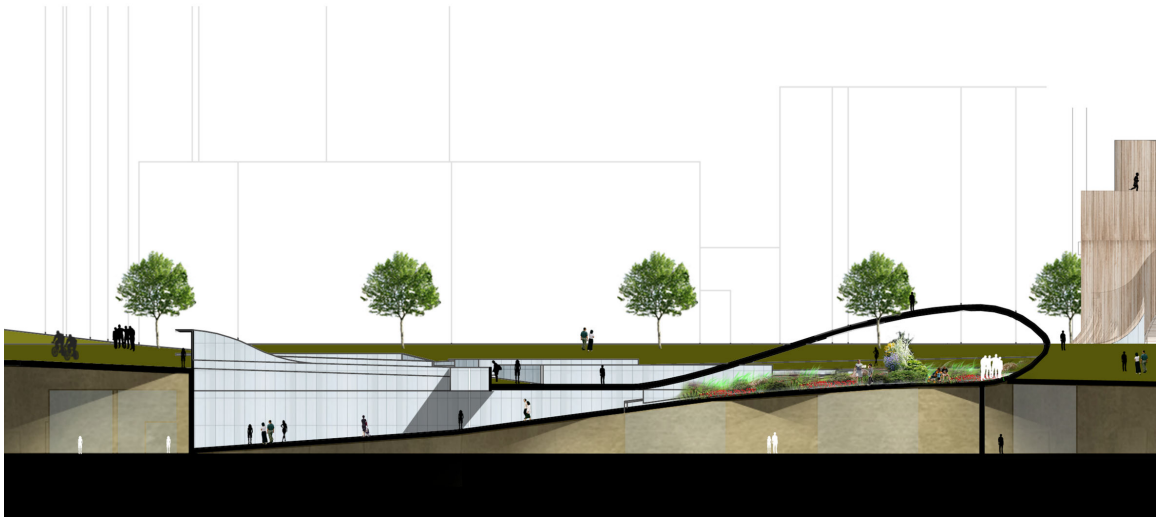
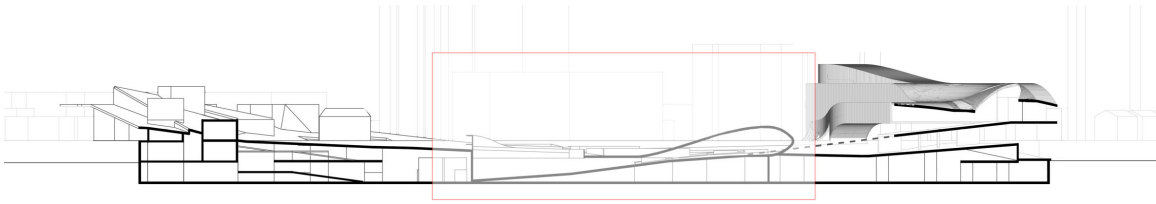


Figure 4.88: Subsurface East-West section (2)

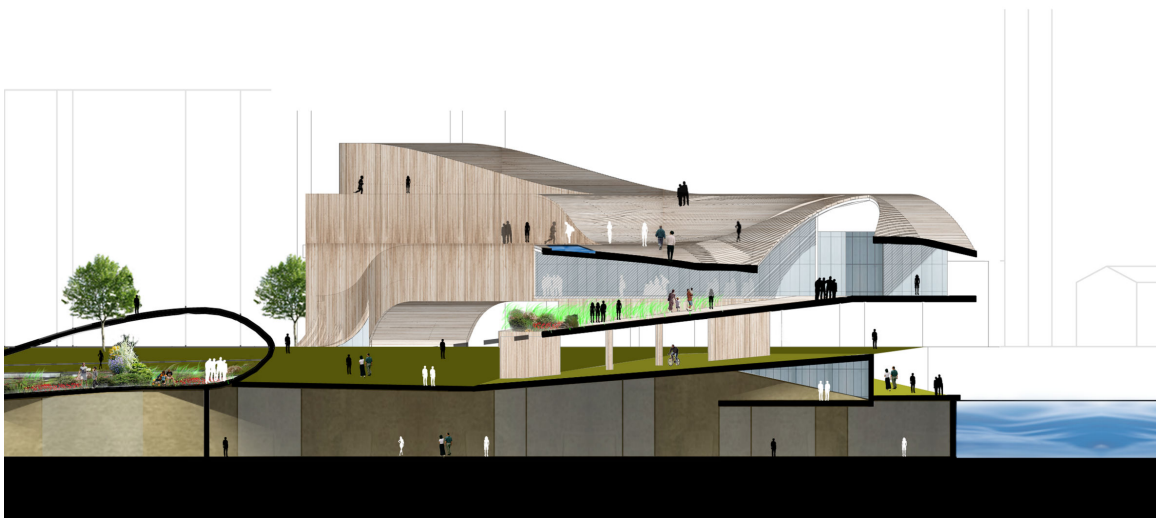
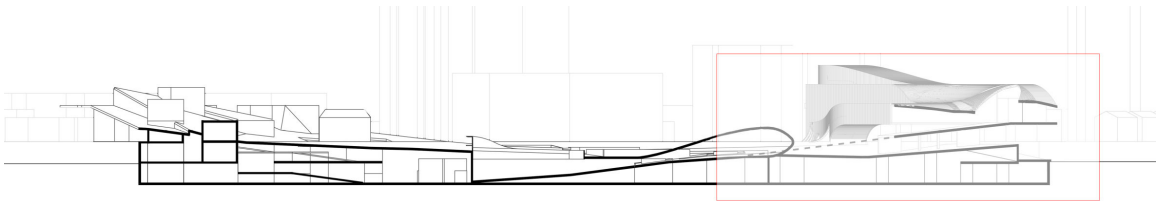


Figure 4.89: Subsurface East-West section (3)

Part 3. Articulation of the Surface

The recognition of urban and architectural scales in this context generate a form of continuity within a variety of conditions and activities, and make the building embrace the performance of the city as a venue for social activities, and initiate tectonic and textural articulation able to perform on urban and architectural levels.

The articulation of the top surface as a means of containing movement and activities provides the opportunity to engage with the user on the scale of texture and create an environment where landscape is used as part of the organizational structure supporting passive, active and intergenerational activities.

The following steps describe the systematic organization of landscape elements:

1. Part of establishing contextual continuity - as described in Part 2 above - is the 'superimposition' of fields onto the natural element creating local conditions that are in continuity with the nature of the context. On the east side this integration between the physical and the natural elements meant the adjustment of the natural element to allow for different recreational activities such as swimming and ice skating. The existing hotels on the west side provided the potential to create a central area or a public space which linked to the Waterfront Trail and serve as a beach and an area for passive recreation.
2. As a form of providing the subsurface access to daylight a series of skylights are introduced at strategic locations positioned above internal ramps and key programmatic areas functioning as points of reference, an architectural tool of communication with the user and a visual link between internal and external spaces. The skylights are connected together with linear skylights oriented orthogonally in relation to the existing grid creating a sensorial effect varying with differing intensities of occupation.
3. A layer of softscape is added using the location of the demolished heritage properties and the skewed grid it creates the basis for a response to various patterns of activities and levels of social engagement between different age groups.



Figure 4.90: Step 1. Accommodating active and passive recreation

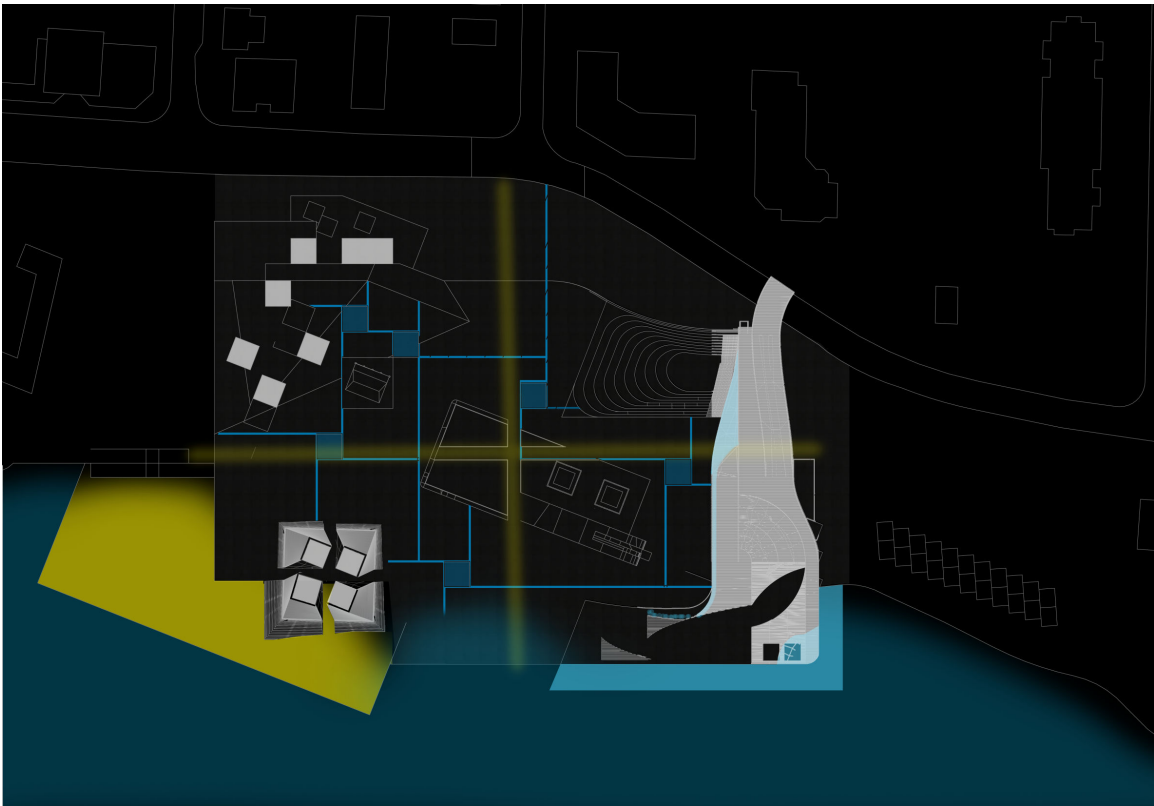


Figure 4.91: Step 2. Skylight / Providing visual continuity and access to daylight

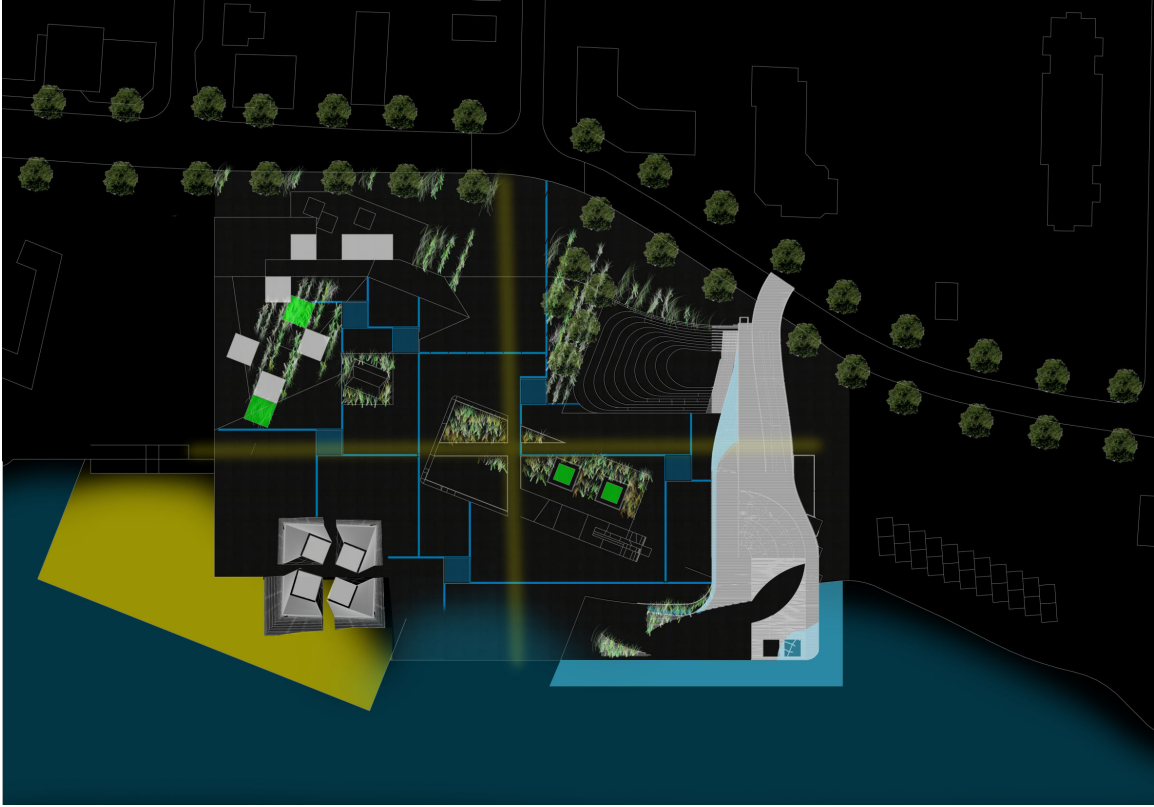


Figure 4.92: Step 3. Sofscape / Accommodating different patterns of activities

Another level of surface articulation is represented in the configuration of the handrail as an architectural element, which is expressed in a variety of shapes and forms - such as a bench, a shelter, or a signage wall - in response to the wide range of public space activities.

By creating these urban and architectural elements using the framework of continuity, the realm of sensation would expand to create an experience of continuity and a level of user engagement on urban, architectural and textural scales and will further enhance the implementation of an antithesis of discontinuity and inconsistency between parts.

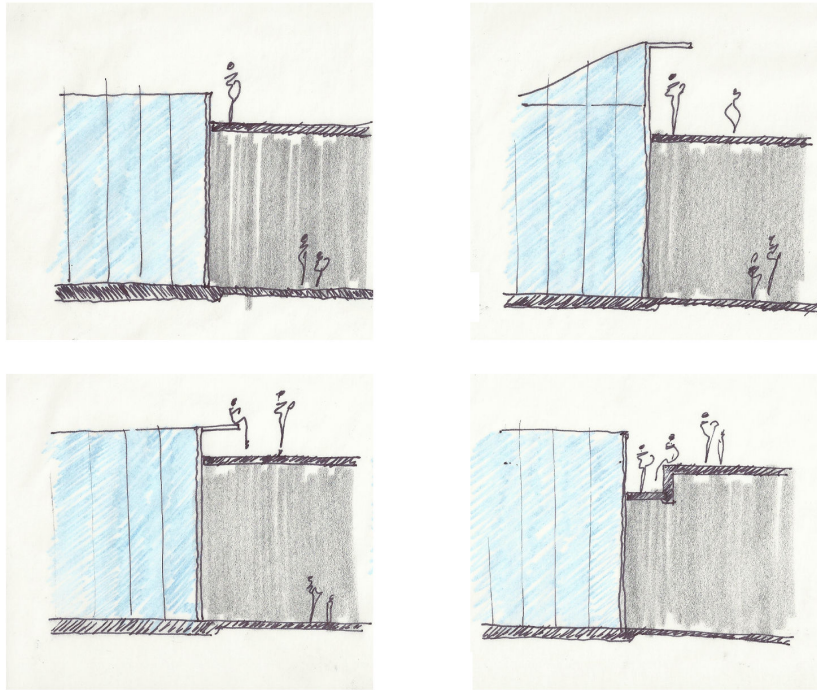


Figure 4.93: Central courtyard wall sections / handrail configurations

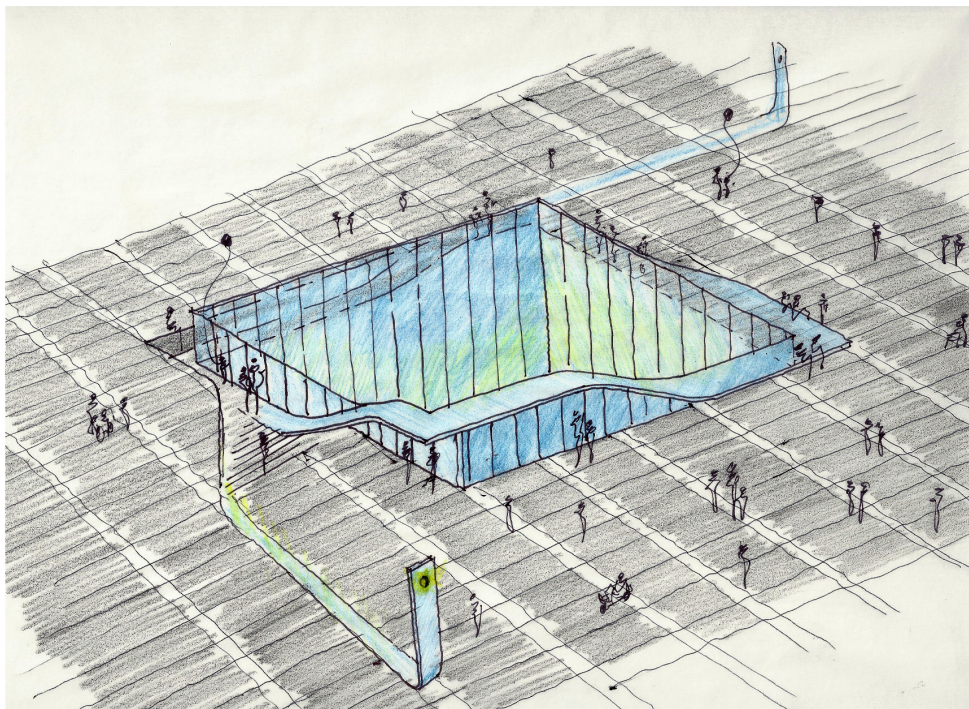


Figure 4.94: Central courtyard conceptual integration of handrails

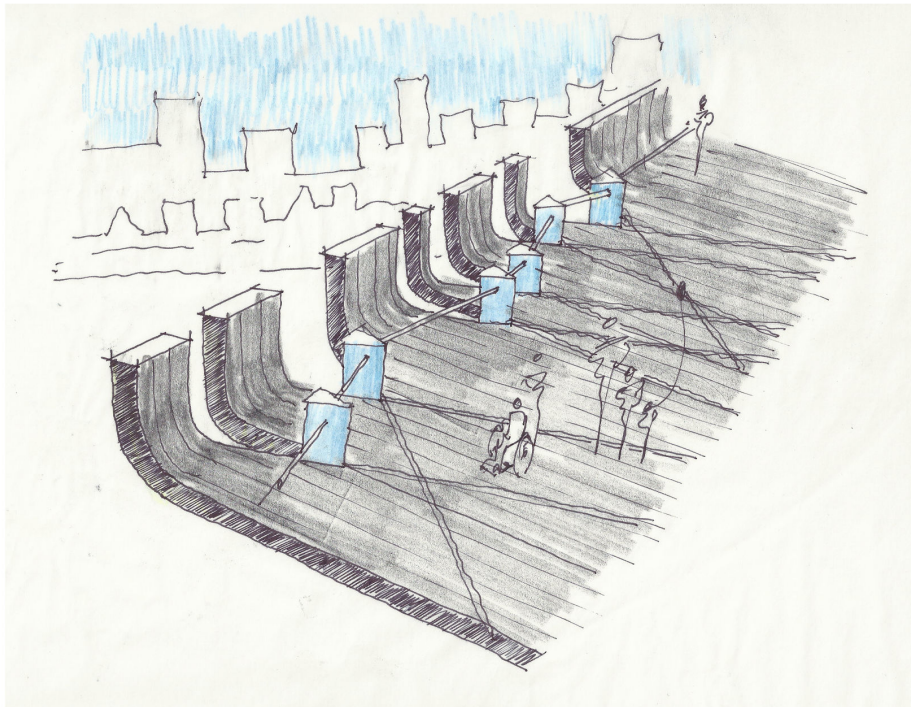


Figure 4.95: Ramp / handrail configurations

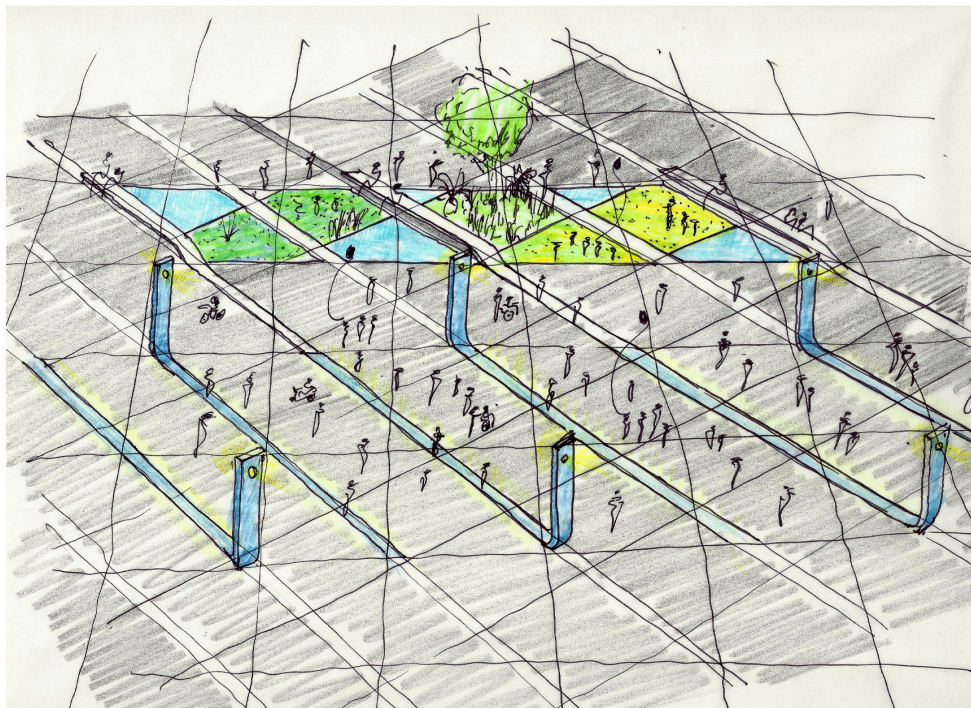


Figure 4.96: Top surface landscape and surface treatment

Part 4. Hotel

This component is part of the retail program, it is located adjacent to, or as an extension of the hotel facilities existing to the east of the site. The physical mass of the hotel is positioned at a distance from the adjacent high-rise residential buildings to maintain view lines to the lake.

The size and the footprint of the proposed hotel is articulated in this context to establish visual and physical continuity through carving voids on the vertical and the horizontal axes. To respond to the two orientations of grid lines, a rotation of the mass in the third dimension is proposed in relation to the 22 degree skew.

The articulation of the massing, based on a three dimensional superimposition, creates a level of physical continuity of movement and flow within the structure on the local level, and establishes visual continuity with the context by addressing long range views from the downtown area.

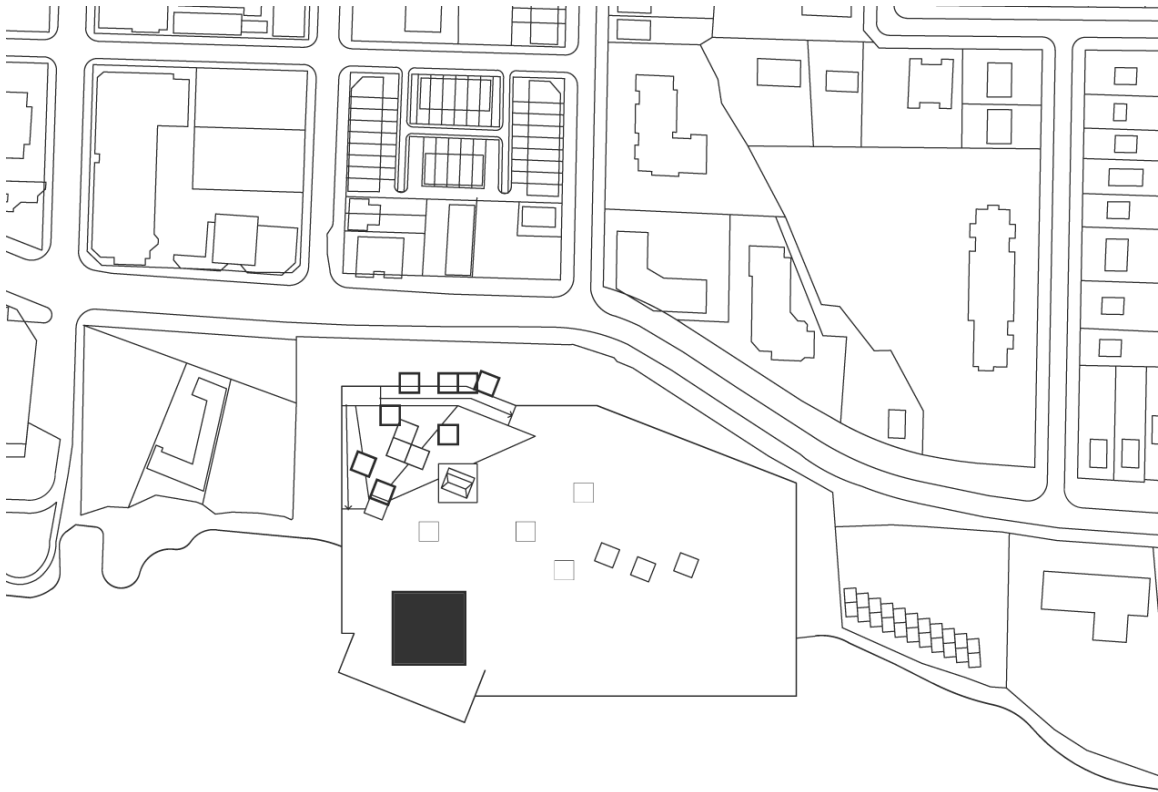


Figure 4.97: Hotel mass

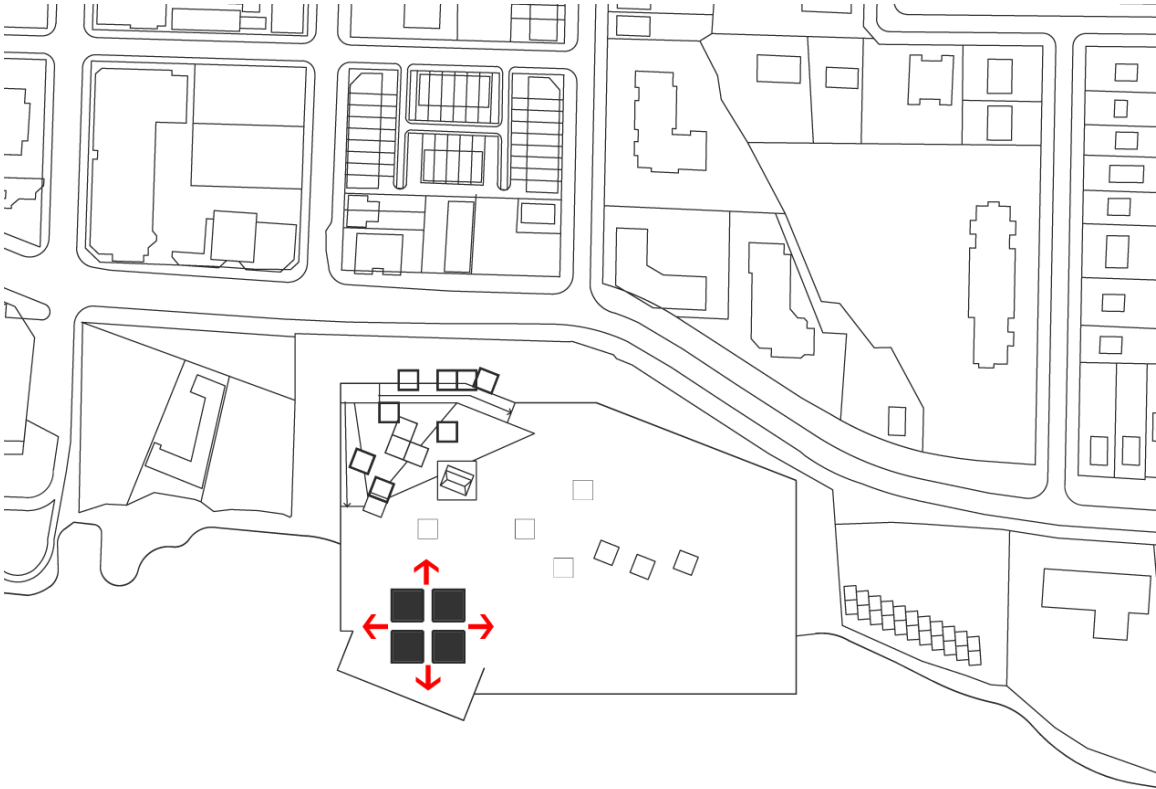


Figure 4.98: Solid vs. void, continuous flow and permeability

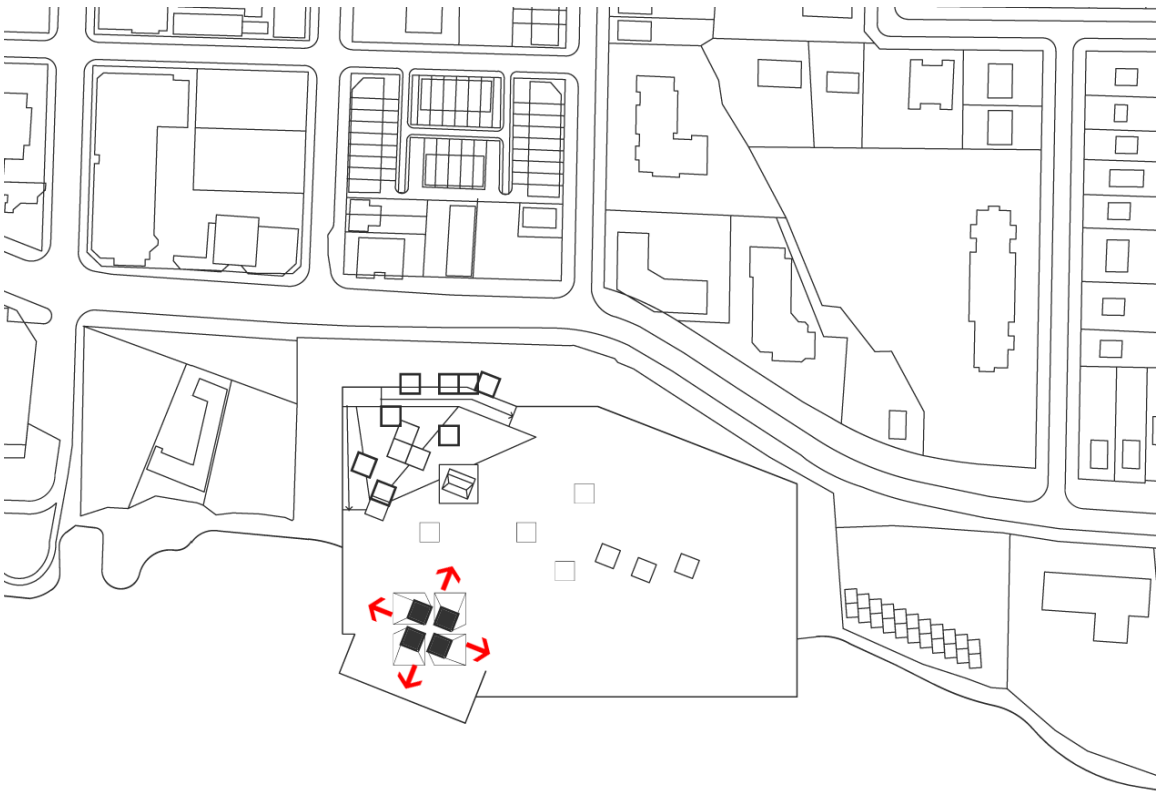
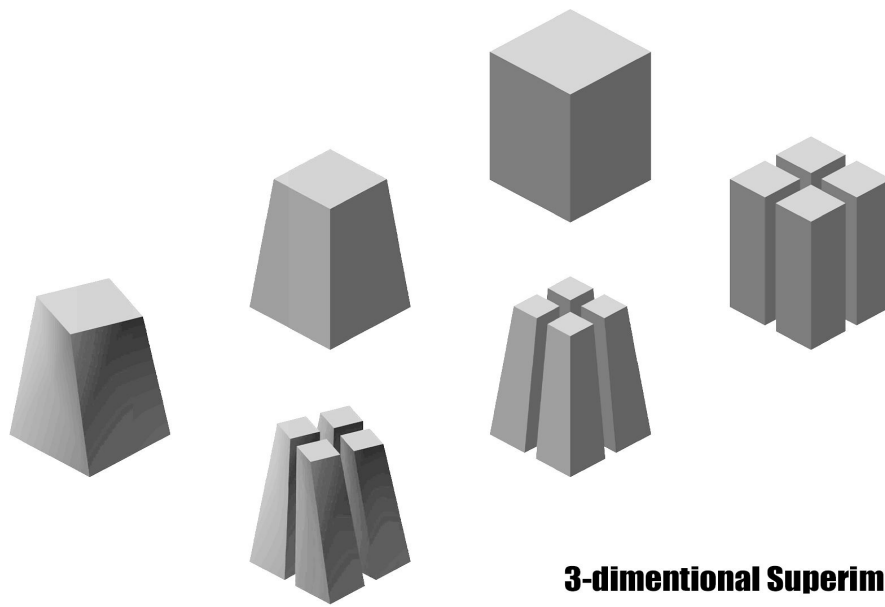


Figure 4.99: Three-dimensional superimposition



3-dimentional Superimposition

Figure 4.100: Massing, three-dimensional superimposition

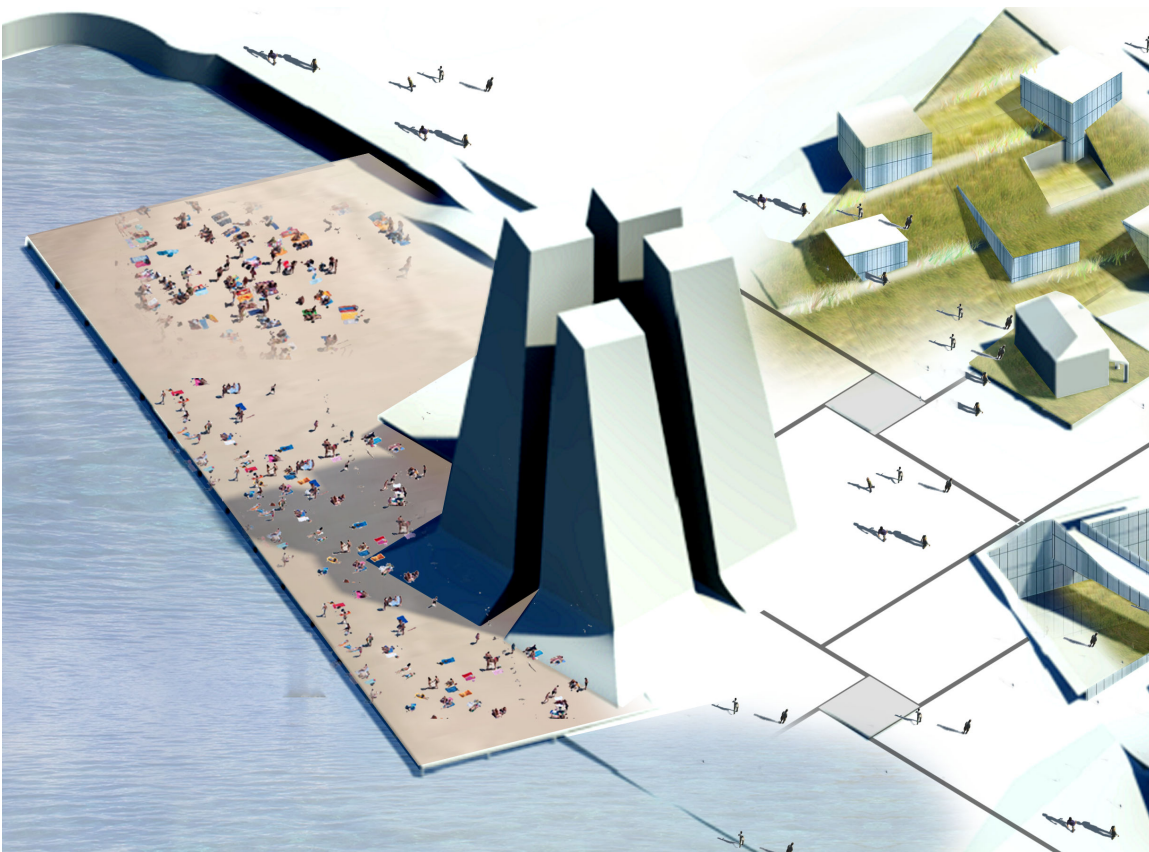


Figure 4.101: Hotel bird's eye view



Figure 4.102: Long-range view from downtown Burlington

Another level of articulation is proposed on the tectonic level by implementing the method of 'smoothness' - ground and vertical surface as a continuous design surface. The placement of the hotel on a the lake suggests a local specificity for the horizontal field in the form of a wood deck extending over the lake. My proposal is to extend the surface of the wood deck vertically onto the surface of the hotel.

Through gradual transition of surfaces and seamless continuity of material composition several conditions start to emerge, the first condition is a typical wood deck on the lower surface, the second condition is a series of horizontal platforms which could take the shape of different urban elements such as benches, terraces and shelters, and the third condition is wood screen or brise-soleil which changes in density according to specific orientation and sun exposure.

The continuity of form and material proposed in this context provides the opportunity to synthesize different elements, functions and programs in one continuum, and provide a dynamic experience and level of engagement rich in variety of elements and in simplicity of order and clarity of perception.

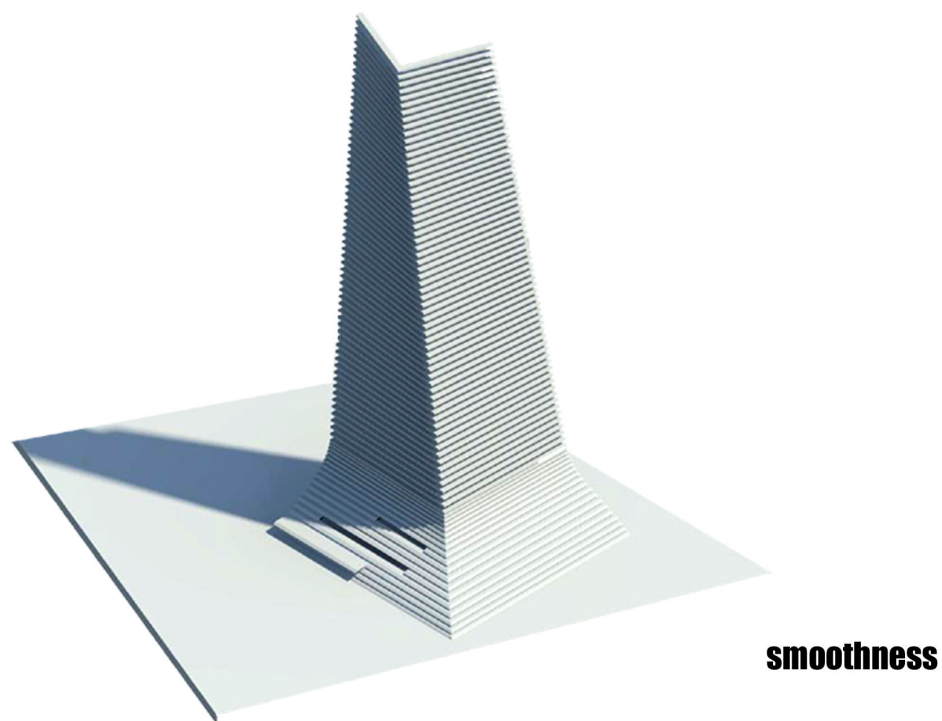


Figure 4.103: Smoothness, hotel wood deck and wood screen

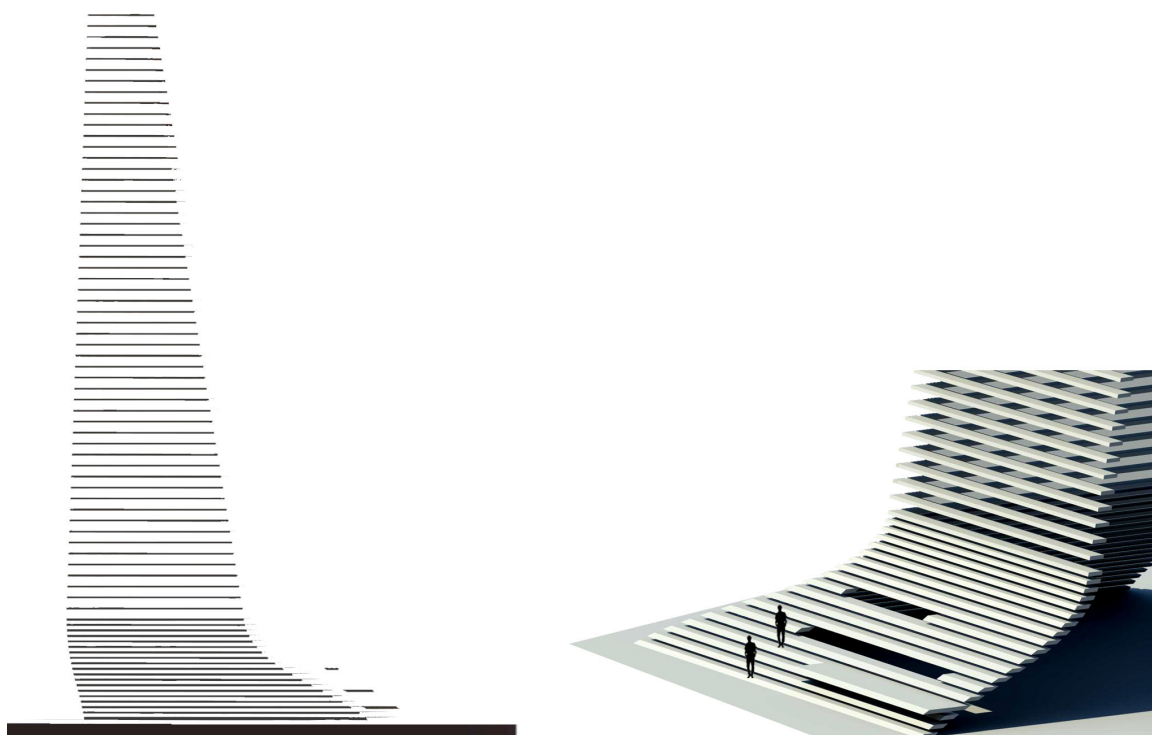


Figure 4.104: Smoothness, hotel wood deck and wood screen



Figure 4.105: Hotel base / Passive recreation

Part 5. Cultural and wellness components

The location of cultural and wellness components on the east side of the site along the twisted surface, which is proposed for the purpose of establishing contextual continuity, suggests a high level of integration and overlap between the two programs which can be spatially explored and architecturally expressed and also suggests a level of connectivity between urban and natural contexts. I believe this level of integration can be best achieved through the method of 'fusion', which integrates the design surfaces with systems architecturally - such as circulation - in one continuum.

The design approach in this context is based on the concept of integration and transition from one state to another, so in order to find a structure of programmatic transition for example, different programs are integrated with different structural conditions, which creates continuity of programs and variation of activities. Architecturally this idea evolves around the aspect of looping, where floor - the surface of action - transitions to wall - the surface of perception - and wall transitions to ceiling, and ceiling into wall and so on, generating a three dimensional experience. In this process, form performs as a tool of connectivity between users, activities, movements and sensations, creating an architectural condition described by Spuybroek as the continuum of the seen, the

sensed and the structured¹⁰³.

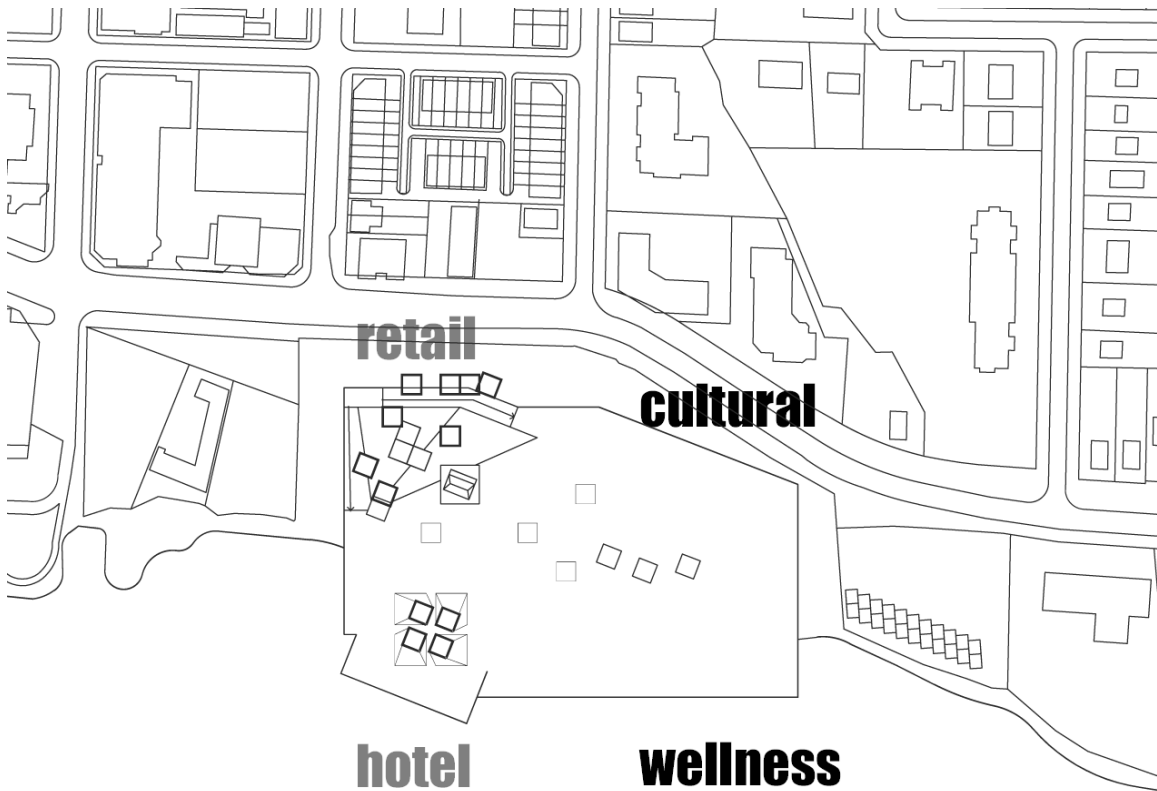


Figure 4.106: Cultural and wellness components allocation

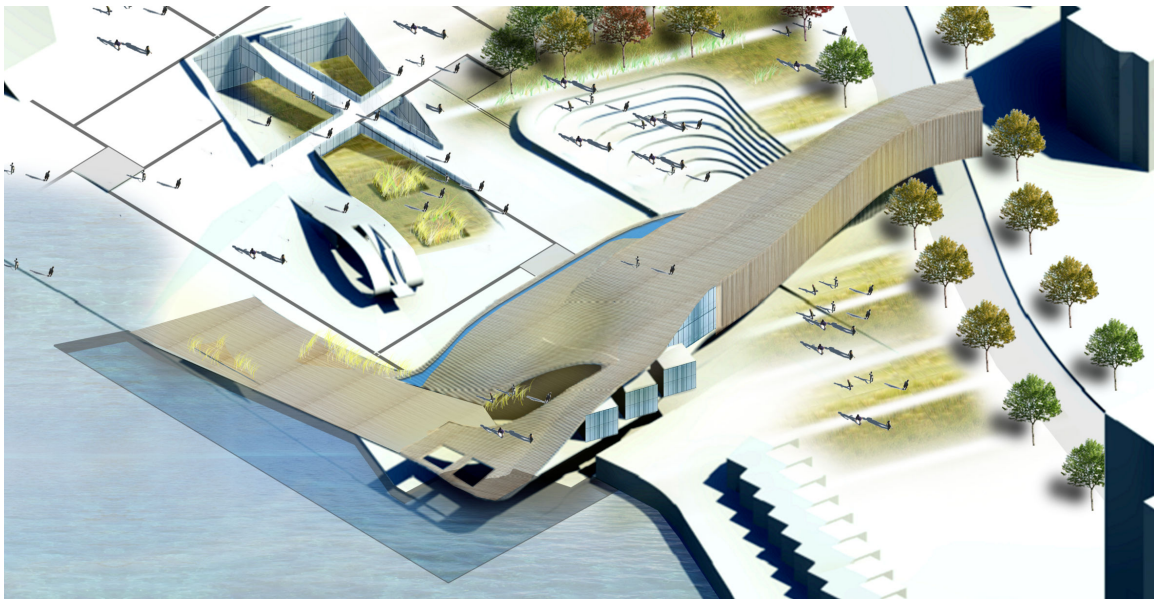


Figure 4.107: Cultural and wellness bird's eye view

¹⁰³ Spuybroek, Lars: [The Architecture of Continuity Essays and Conversations] Rotterdam, V2_Publishing, 2008

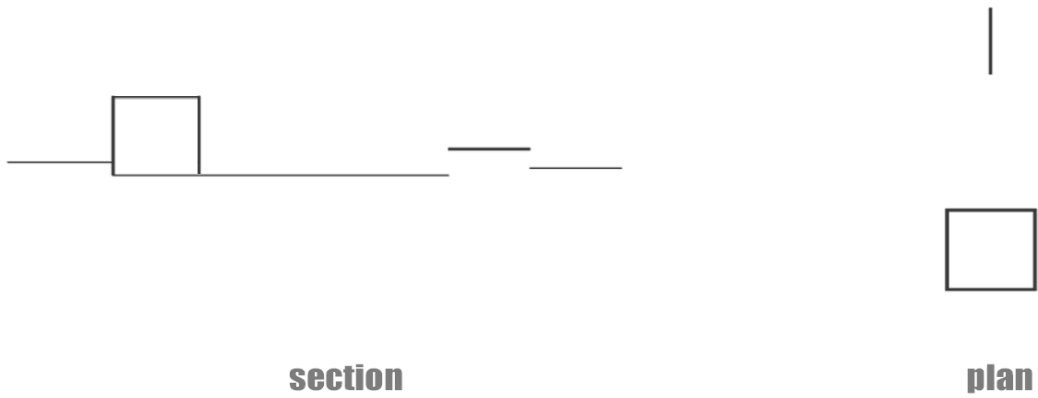


Figure 4.108: Horizontal and vertical planes

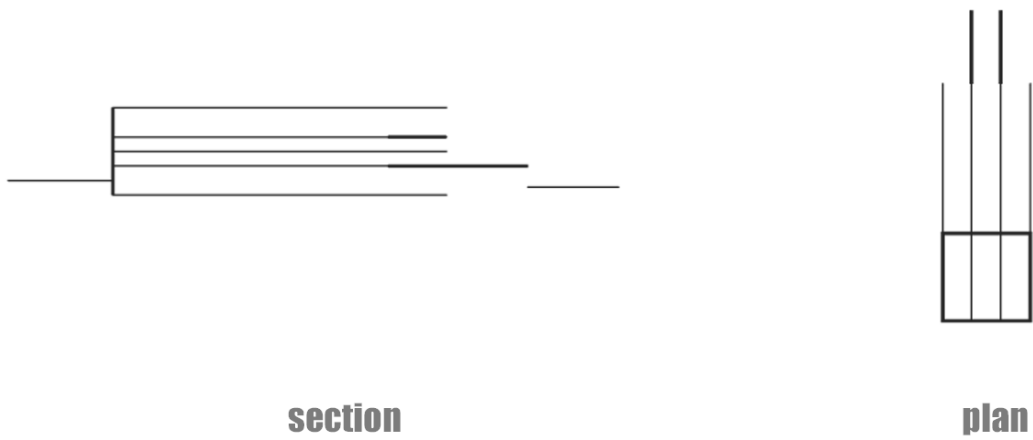


Figure 4.109: Introduction of planes (surfaces of action and surfaces of perception)

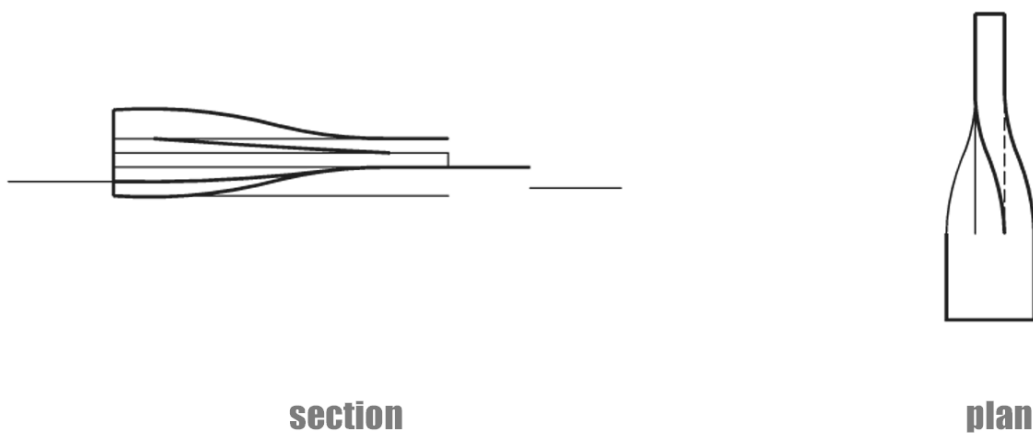


Figure 4.110: Transition of planes

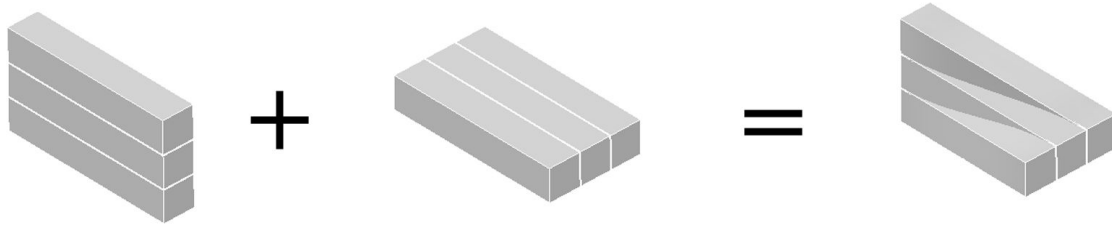


Figure 4.111: Transition of volumes

The implementation of this idea is generated from the field condition which transitions from a horizontal surface on the south side to a vertical surface on the north side, which evolves into a transition from a horizontal volume into a vertical volume. This condition allows a consistent transition of spatial experience looping between the cultural and wellness program components.

In this case, the transition from a horizontal surface into a vertical volume creates an understanding of the architectural form as information that guides the users' action and shapes human behaviour, meaning a spatial configuration is immediately perceived as a reflection of the activity it serves and as an extension of its contextual condition. This connection allows the user to read architecture and to perceive its functionality visually prior to any physical engagement; extending the experience of space beyond its physical boundaries. For the elderly, architecture as perceptible information, on the physiological level, would require little physical effort when navigating through a variety of programs; this level of architectural and programmatic clarity constitutes the essence of an age-friendly architecture.

The internal condition created as a result of the spatial transition suggests a transitional space that is as important as the functions and spaces it connects; this space serves as a place for the redirection of patterns of use and human behaviour and as a place which accommodates freedom of movement and program.

The tectonic continuity between the horizontal surface and the vertical volume engages the existing contextual condition, which combines the natural and urban environments, by creating a physical connective tissue in relation to the existing physical qualities and programmatic capacity.

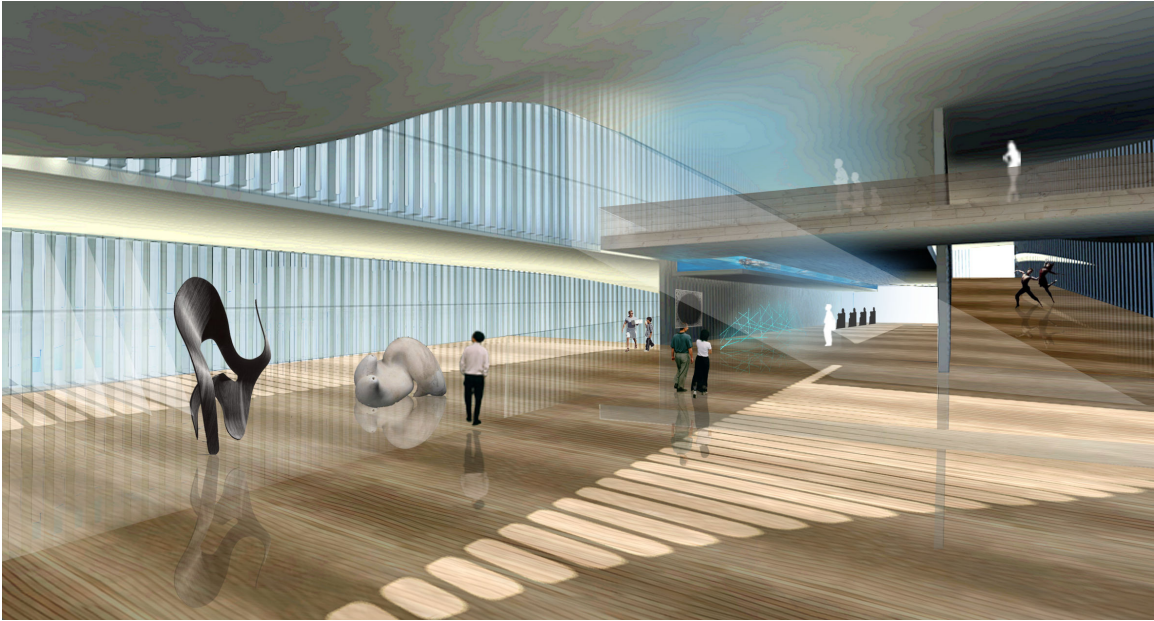


Figure 4.112: Cultural and wellness interior view / Transition of space and program

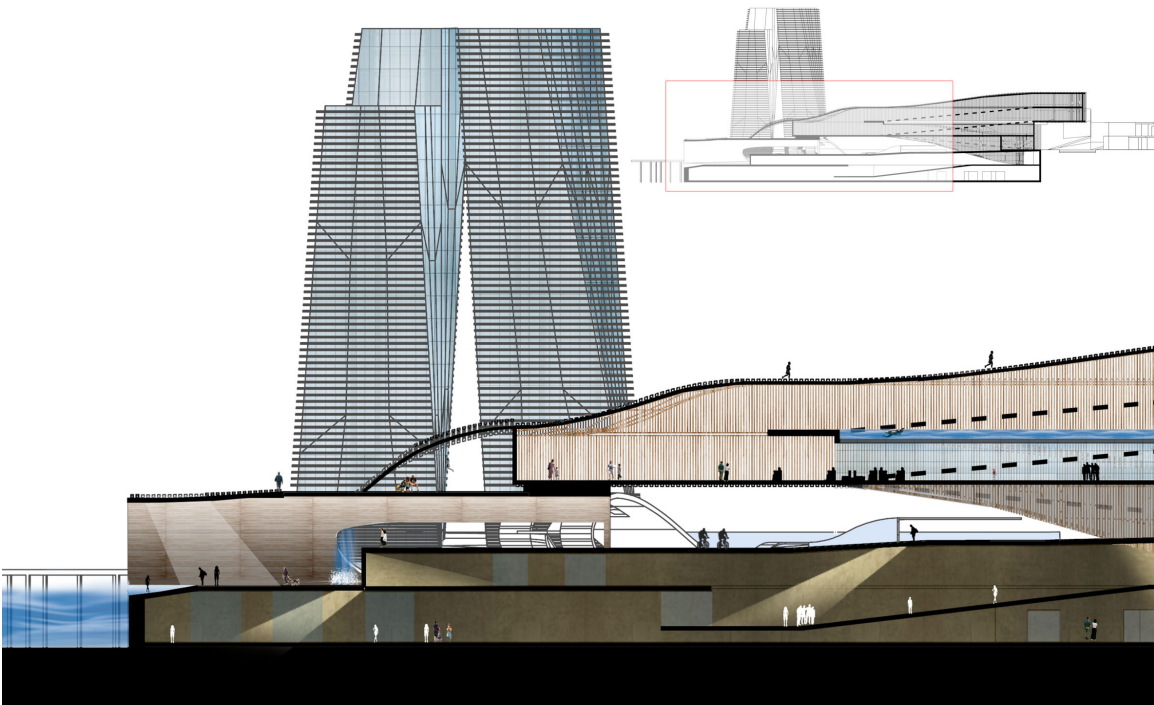


Figure 4.113: Cultural and wellness North-South section (1)

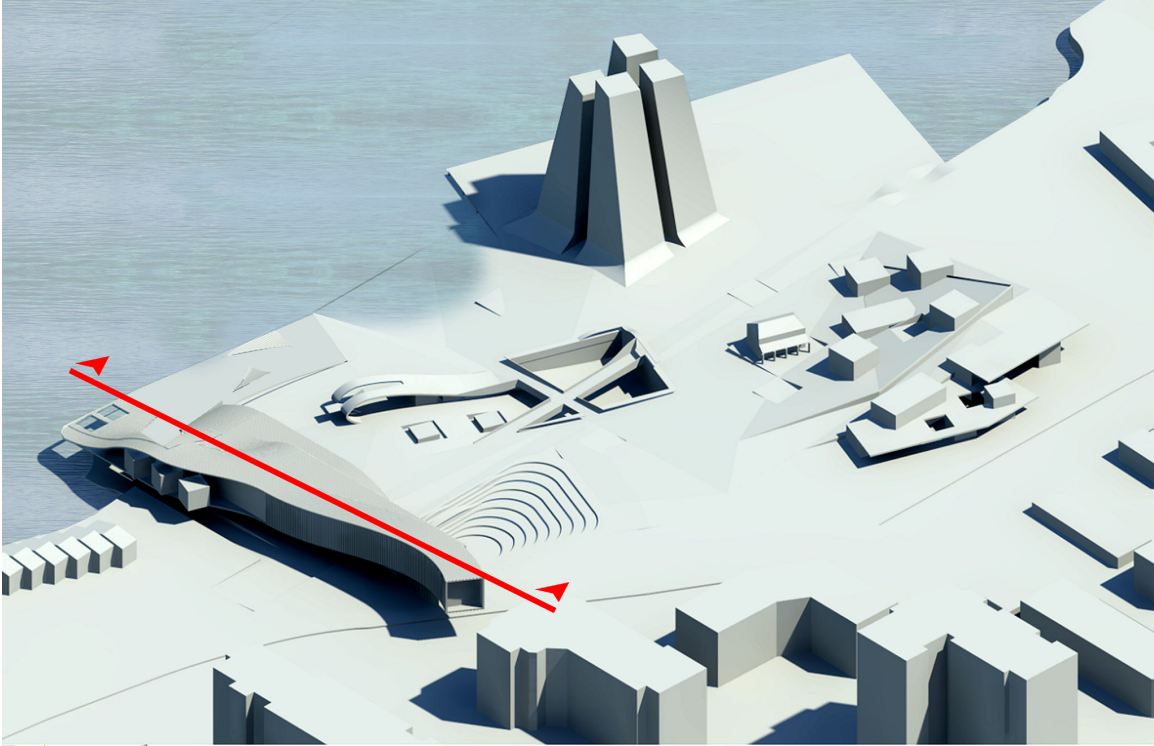


Figure 4.114: Cultural and wellness North-South section line

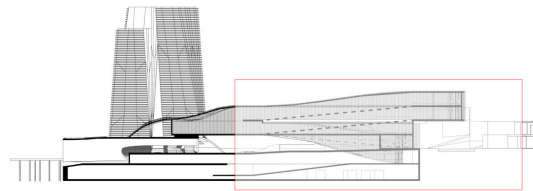


Figure 4.115: Cultural and wellness North-South section (2)

At the lake edge, the introduction of multiple horizontal surfaces creates different levels of physical engagement and visual connectivity with the natural condition, which activates a variety of activities ranging from the active to the passive encompassing different users of different age groups.

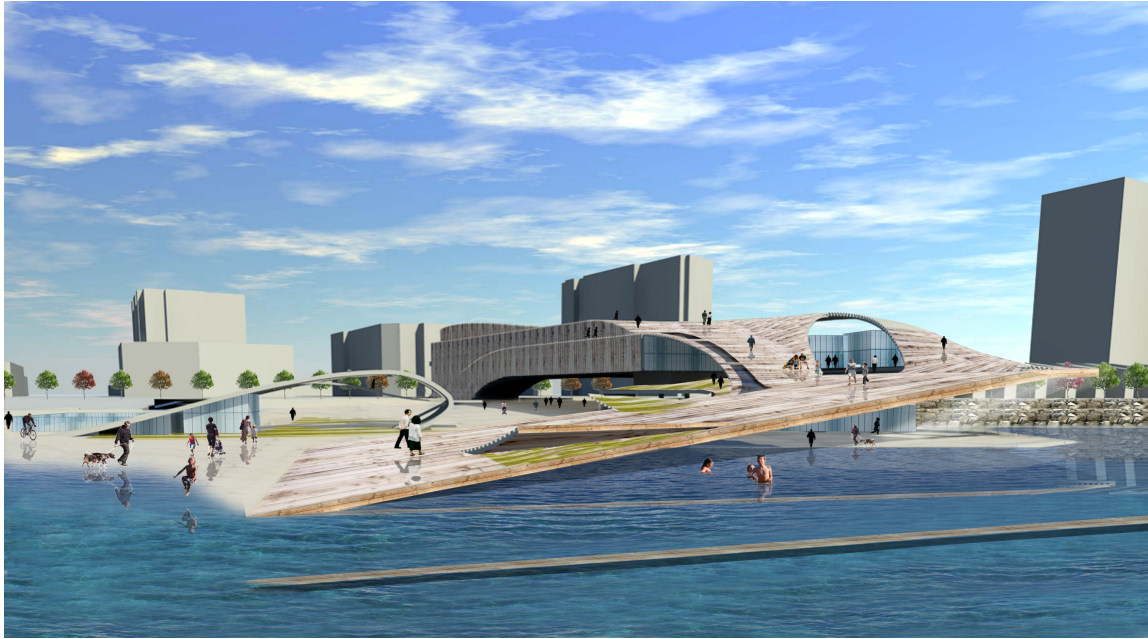


Figure 4.116: Cultural and wellness south perspective



Figure 4.117: Spa/wellness program south perspective



Figure 4.118: Retail and wellness perspective (winter)

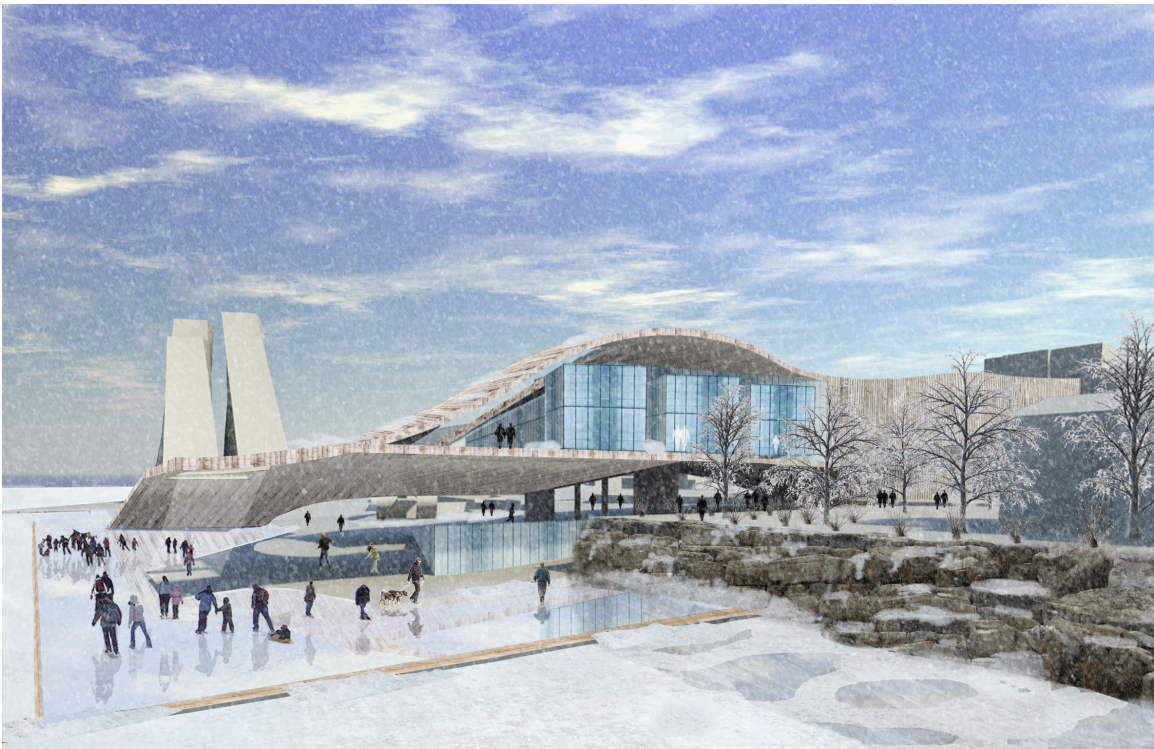


Figure 4.118: Spa/wellness program south perspective (winter)

At the north east edge of the site, the site analysis indicated the potential of creating a gateway condition for the purpose of creating visual continuity between the residential area and downtown Burlington and as a form of creating rapport with the urban environment in terms of scale and orientation.

One of the local conditions proposed is the introduction of an outdoor auditorium - in addition to the indoor auditorium located at the subsurface - on the west side of this building as a form of extending the cultural program externally to accommodate continuity of use as a public space throughout the seasons and serve as a place for a multipurpose collective activity.

By using the concept of 'smoothness' the outdoor space and the external surface of the cultural and wellness building become tectonically integrated. This integration is then adjusted to suggest a degree of variation in response to specific spatial and functional purposes such as, accommodating different seating heights, access to daylight for the space below, visual connectivity between the surface and the subsurface, and physical point of entry.

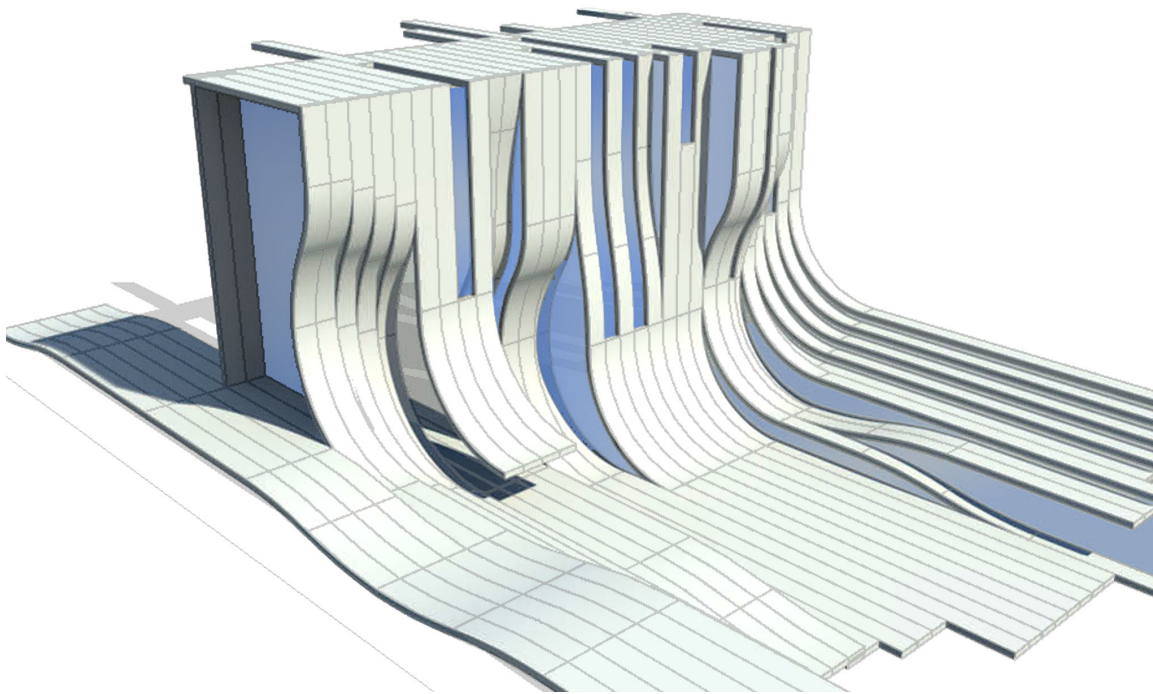


Figure 4.119: Early study of tectonic continuity and the application of 'smoothness' as a design method

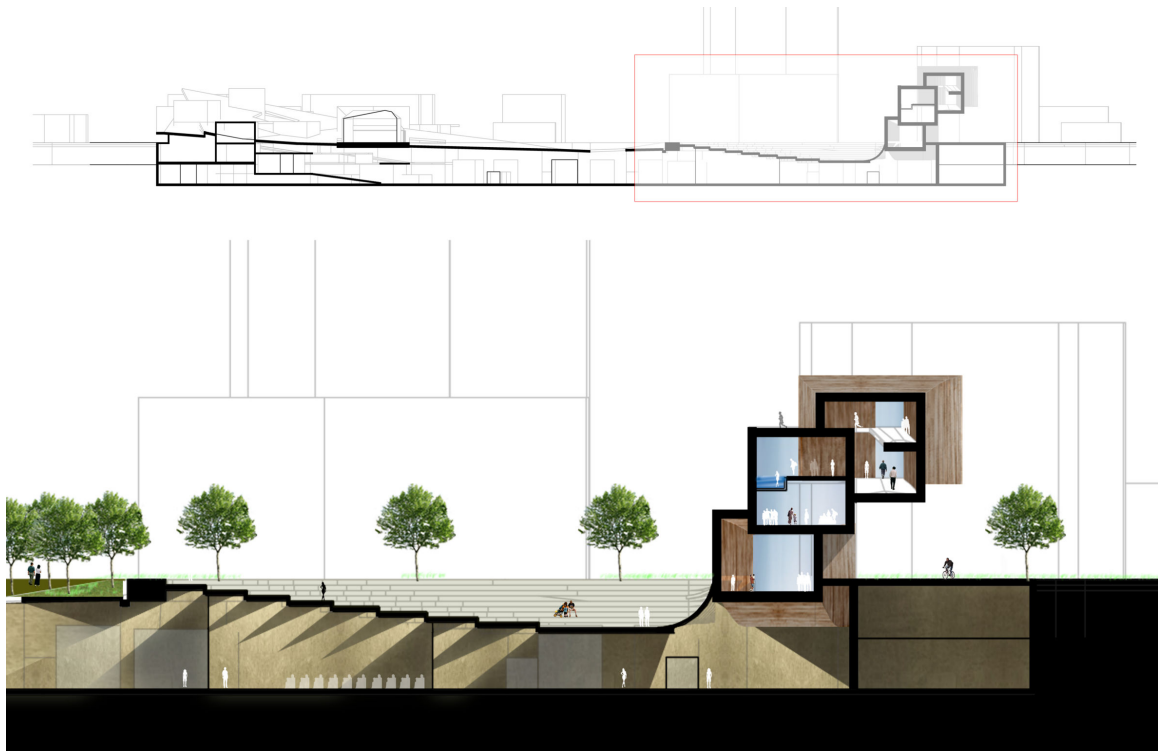


Figure 4.120: East-West section at the cultural and wellness component



Figure 4.121: North access. View looking south-east



Figure 4.122: Gateway. View looking west along Lakeshore Road

The cultural and wellness building houses differing intensities of programs and activities occurring along a continuous architectural fields and spaces accommodating a smooth and seamless transition of contexts and adapting to a variety of existing and proposed local specificities. It constitutes a place of porous interconnectivity and the products of relationships between users, activities and contexts are manifested through the experience of architectural continuity.

SECTION - V - CONCLUSION

The demographic phenomenon of a fast growing aging society has significant implications on the shape of the built environment and raises questions concerning the capacity of the existing infrastructure to meet the projected demands of an aging society. To maximize efficiency and minimize government spending in response to the needs and the demands of the elderly, the development of existing communities with aging as a factor is suggested by researchers and scholars such as David Foot. However, the baby boomers as a group require a culturally rich and physically active lifestyle. Therefore, this group is expected to age differently from the current elderly

population and the built environment must respond to different rules and set of principles from the ones currently in place that are highly oriented towards the specialized environment and the institutional model.

The limitations of the institutional model as a means of isolation and segregation associated with the escalating cost of health care emphasize its unsustainable characteristics both socially and economically. Therefore, rejecting the institutional model and promoting the concept of 'aging in place' is proposed based on the success of the Danish model, which in 1987 abandoned the institutional model and promoted integration of amenities and services for the purpose of achieving efficiency, autonomy and self-determination.

This programmatic proposal supports the idea of developing existing communities with facilities that are highly accessible to different age groups, lifestyles and needs, and incorporate through commercial, cultural and wellness amenities and services an array of activities implementing integration and social continuity as a theme. The selection of the site in Burlington with its high concentration of an aging population provided a platform for a social experiment enriched by the existing variety of contextual condition, natural and urban - residential, commercial and recreational - and provided an opportunity to shape the proposed program according to the existing conditions in which the program served as a development and an extension of the context, creating an active relationship that helped integrate the existing dichotomy of uses of together.

The proposed architectural agenda as an antithesis to Cartesianism based on the themes of 'superimposition', 'smoothness' and 'fusion' provided the basis for a manifestation of establishing consistency between physical, cultural and social contexts and provided an opportunity to establish rapport with the existing built environment. The architectural agenda also constituted spatial unfolding of inconsistencies between the contextual condition and human activities for the purpose of generating a system of organization for the proposed programmatic variation responding to differing programmatic intensities, movement and flow.

The nature of the thesis concern and condition requires a high level of user engagement with the context. Therefore, the architectural agenda focuses on the architectural form

and its continuity with the context and the experience it creates in order to formulate an architecture of continuity, in which “the sensed, the seen and the structured share the same continuum”¹⁰⁴. This high level of user engagement - especially the elderly and the physically challenged - need to be based on design principles which support independence, participation, self fulfilment and dignity. I found in the integration between Universal Design principles and ‘fusion’ an architectural syntax which guided the organization and composition of architectural continuity with the aging in mind.

The notion of integrating Universal Design principles and ‘fusion’ initiated an architectural schema that is based on relationships and on a field of continuity of tectonics, contexts and program rather than the conventional design process of plan and plan extrusion; it is a process that is integrated with spatial experience and human behaviour, where program and site are unfolded.

The field provided a strong architectural tool of response and adaptation; its capacity to take different shapes - horizontal, vertical, internal and external - and adapt to different adjustments allowed the field to operate as a unifying element of flow, movement, program and space, and to combine between consistency of organization and variation of program and local contexts in one physical element. This level of flexibility and adaptability constituted the essence of architectural continuity and enriched the design process.

On the other hand, the theme of ‘superimposition’ has limited potential in terms of supporting a high level of user engagement and functions only at the scale of urban planning, and needs to be integrated with other themes such as ‘smoothness’ to create a clear means of user perception. Conversely the themes of ‘smoothness’ and ‘fusion’ are able to address internal and external spatial conditions and engage the user visually and physically with space and created an architecture as a means of communication and a tool of action.

The design process I followed created an architectural product that emerged from an

¹⁰⁴ Spuybroek, Lars: [*The Architecture of Continuity* Essays and Conversations] Rotterdam, V2_Publishing, 2008

organization of relationships between contextual conditions, program and human behaviour. This organization established the experience of architectural continuity where action and perception are synthesized in the same realm promoting clarity and legibility of form and function, offering an alternative and reconsideration of the fundamentals of architecture - program and space - and the context it occupies.

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