

The Regenerative Urban Ecology Hubs:

An Alternative Approach to the Design and Operation of
Pedagogical Environments in the Toronto District School Board

by

Tristan O’Gorman

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Architecture (M.Arch)

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APPROVED/APPROUVÉ

Thesis Examiners/Examineurs de thèse:

Tammy Gaber
(Thesis Advisor / Directeur(trice) de thèse)

Bruce Mau
(Thesis Second Reader / Deuxième lecteur(trice) de thèse)

Carmela Cucuzzella
(External Examiner / Examineur(trice) externe)

Approved for the Office of Graduate Studies
Approuvé pour le Bureau des études supérieures
Tammy Eger, PhD
Vice-President, Research (Office of Graduate Studies)
Vice-rectrice à la recherche (Bureau des études supérieures)

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01 | The Allegory of the Pine

This fictitious hybrid composition explores the conflicting orientations of humankind in ecological landscapes. It depicts a quasi-architectural Eastern White Pine, in an imagined state of (de)construction, as an incubator for ecological inquiry and discovery.

“Education is the point at which we decide whether we love the world enough to assume responsibility for it, and by the same token save it from the ruin which except for renewal, except for the coming of the new and the young, would be inevitable. And education, too, is where we decide whether we love our children enough not to expel them from our world and leave them to their own devices, nor to strike from their hands their chance of undertaking something new, something unforeseen by us, but to prepare them in advance for the task of renewing a common world.”

Hannah Arendt, *The Crisis in Education*, 1961

regenerative design
ecological stewardship
urban rewilding
pedagogy of place
experiential learning

A novel approach to the dissemination of ecological knowledge in Toronto is urgently required: one that does not presume miracle support for new builds in the future but instead initiates its own regeneration today by reimagining latent sites of opportunities as hubs of ecological thinking. By synthesizing ideas of life-centered design, community participation and ecological urbanism into one quasi-architectural typology – the Regenerative Urban Ecology Hub –this thesis project contributes to the creation and dissemination of ecological knowledge with the population best poised to sustain positive change: **children**. By empathetically navigating the intersection of ontology, pedagogy and ecology, this thesis project imagines what roles regenerative architectural theory and design could have in restoring the dissemination of ecological values in the Toronto District School Board. In redefining how the facilities and operations of these vulnerable programs are conceived and designed, architecture can ambitiously elicit both a pedagogical reform and an urban rewilding.

ACKNOWLEDGMENTS

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Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada

Ontario 

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PREFACE

The Visitor

Years ago the male and female interns at the Scarborough Outdoor Education School alternated sleeping in the ‘Cave’ each spring. In 2018, it happened to be our turn in the worn-down log cabin. There were three of us that year; one had scored the tiny room at the back with the small north-facing window looking out at a wall of forest, the second also had a room to himself and was sleeping on the bottom level of a worn-down, rickety old twin-sized bunk bed, and then there was me, who had the single mattress tucked in the corner of the joint living room / vestibule space, being held up by spare milk crates and retired brass pots and pans. There wasn’t much else.

Our home that spring must have been built a half-century before, and its old age was showing. The cabin was perched precariously on a small muddy hill that would prove treacherous to climb after the lightest of snow or rainfalls and was held up by a stone wall that was slowly eroding away. A shallow and sloped porch ran the length of the log cabin, its short guardrail and long floorboards were so loosely fixed they posed more of a tripping hazard than anything. A short screened-door and a second solid door sat loosely on hinges at the threshold, both doing about as good a job of keeping out the wind and early-spring cold as they were at keeping out the bees, mice, moths and occasional red squirrel. Inside was our humble abode, fully furnished with a couch that had tragically lost an arm the season before, an old microwave that refused to turn on but that was woe to be thrown out for

the delusion of warm food it offered, a Gamecube hooked up to an 8” monitor and an impressive display of Busch Beer cases against the east wall that had been left over from the cooks who inhabited the cabin during the off seasons. Perhaps four beams gave the space structure, but were sagging under the weight of more than they were ever meant to bear. They held up the rusted tin roof, and distributed its load onto exterior walls made of dried, cracked old logs.

Despite all of the dilapidated cabin’s perceived flaws, however, we regarded the space with utmost affection; there was such a profound sense of place about it that couldn’t be ignored. Perhaps it was the glorious sunrises that reflected off the lake and through the mist and dew to wake us up each morning. Perhaps it was the unobstructed night sky and the millions of stars that lighted our path home each night. Perhaps its was nothing so whimsical at all but rather just the fact that this cabin and the life it represented offered us all a chance to take on something new and unfamiliar but ultimately revelatory and transformational.

ptipt - mnah mnah mnah mnah

It was early in the spring and late at night when the visitor came by our home. I had met him up-close only once before when I had wondered how sharp his quills might be and had decided, in a moment of great naiveté, to learn by doing - a lesson we often promoted at the outdoor education school. He had waddled slowly along or porch even with the alien pursuant behind him, with his snout close to the ground undoubtedly searching for traces of food or prey. I could see that the fur on his underside was short and sleek, but the quills on his back were flared, tall, and, as I would soon discover, remarkably sharp - each ending in a fine barb that could latch itself even onto the most timid and gentle of probing hands. On this night, however, it wasn’t by sight or touch that I knew our visitor had returned, it was by sound.

ptipt - mnah mnah mnah mnah

I was the last to head to bed that evening, and even with my hearing-aid put aside for the night, the sudden and astoundingly vigorous chewing of wood mere inches away from my head pulled me into an alert upright position quicker than any brilliant sunrise did. I had never heard a sound quite like it before, and yet it was unmistakable: an animal was eating our cabin. An

PREFACE

animal, mind you, much larger than the ants, chipmunks or even woodpeckers whose occasional burrowing and nibbling we had grown accustomed to. I warily glanced through a gap between two logs of the wall beside me and sure enough, in the darkness was the silhouette of our newfound companion. He had found the prey he was looking for: our cabin. I could hear him pulling strips of wood slowly off the logs that framed our home and letting them fall a short distance to the ground to munch on before peeling away the next strip.

ptipt - mnah mnah mnah mnah

Soon stifling my laughter, I wondered how best to respond to this very messy and potentially even dangerous predicament. I had offended this creature once before and came away with a bandaged hand so a second confrontation was the last thing I wanted. I thought perhaps I could communicate with him... but my cabin-mates would have not have appreciated being woken in a state of horror when they had heard me hissing, growling, stomping my feet or banging on walls in the room beside them - and besides, I hadn't quite yet mastered this particular rodent's language. Throwing a loose Birkenstock or bottle of sunscreen towards him seemed to be the next best solution, and yet somehow the idea of me hurtling random objects at animals didn't seem to line up with the values I was supposed to uphold had as an outdoor educator. I decided instead to do nothing.

I lay there in the darkness patiently listening to the cabin being mutilated by a new kind of slow-violence, thinking perhaps my companion would understand my submission as a gesture of kindness. I thought perhaps in showing this animal some compassion and by respecting his space, he might miraculously do the same; that he may soon satisfy his appetite and move on to a more exciting (and hopefully more nutritional) meal.

ptipt - mnah mnah mnah mnah

He did not. Over the course of hours, however, what had initially been a startling sound somehow became soft, rhythmic, lulling and oddly moving. It was a reminder of the incredible wilderness I was fortunate to immerse myself in, it was a reminder that I was sharing this landscape with others, and it was a reminder that often it the things that go unplanned that have the most profound effect on us. As I slowly drifted off to the sound of this creature feasting on our home I thought about how this space had come to carry such

a profound sense of place for each of us even despite all of its apparent blemishes.

I wondered then, and still do now, if our visitor that night had had any idea of what he was doing beyond indulging in a free meal. Had he been conscious of the fact that he was actively sculpting our environment as much as we were sculpting his? Had he known, through some innate instinct, that our cabin was ready to return to the earth? Is it possible that somewhere deep in this small creature's mind was the understanding that this place could be renewed? It often seems that humans are often the ones entitled with the 'responsibility' of shaping the world around us - and yet in this moment it was clear that our visitor was an actor in place-making as much as we were. It suddenly occurred to me that what made this space special was not the building itself nor the three humans who inhabited it, but how deeply rooted in nature it was and the opportunities it afforded to so many. I wonder now what other subtle cues from nature we might pick up on if we lay back and submitted to it - even just for a moment. I wonder now what other lessons we could draw by immersing ourselves in these kind of intimate experiences more often. I wonder now what kind of new world we could contribute to if we saw all dilapidated spaces as latent sites of ecological experiences.

ptipt - mnah mnah mnah mnah

At some point in the night those thoughts made way to dreams - and our visitor must have eventually moved on for he was nowhere to be seen or heard the next morning. Perhaps not coincidentally, that spring would turn out to be the Cave's last. In its place now is a pristine two-story cabin made of logs as yellow as the day they had were felled. A part of me reminisces about the decrepit old cabin I called home for a spring, but a much larger part of me gets lost in imagining all the incredible stories that will come from this new space. I wish I could share what made the Cave so special with the thousands of the students who will never know it, but trusting that any one of them could have their own unique but equally profound experiences in this new space is perhaps even better.

02 | The Allegory of the Porcupine

The first in a series of digital sketches, this drawing playfully juxtaposes two people and a porcupine with enough scalar ambiguity to echo the thesis' stance that humankind needs to establish alternative relations with other terrans - perhaps a relation that dissolves our position as the authoritarian species.

T. O'Gorman



INTRODUCTION

Environment, Education, Architecture

Ecological education has been put in a particularly precarious position at a point in time when its lessons of environmental stewardship and social advocacy are most needed. The architectural consequences of legislative disruptions and urban desertification have brought about the atrophy of these indispensable learning opportunities across the province of Ontario, particularly in urban regions such as Toronto (fig.03). Ecological inquiry has been positioned as a topic that is engaged only at isolated and peripheral moments rather than being positioned as a central foundation upon which all other education can take place. This dangerous precedent has made evident that a novel approach to the dissemination of ecological knowledge is urgently required: one that does not presume miracle funding for new builds in the future but instead regenerates vitality itself, today, by setting up the conditions to reimagine latent sites of opportunities as hubs of ecological thinking. By synthesizing architectural notions of regeneration, life-centered design, community participation, adaptive reuse and ecological urbanism into one quasi-architectural typology—the Regenerative Urban Ecology Hub—this thesis project actively contributes to the creation and dissemination of ecological knowledge with the population best poised to sustain positive change: children.

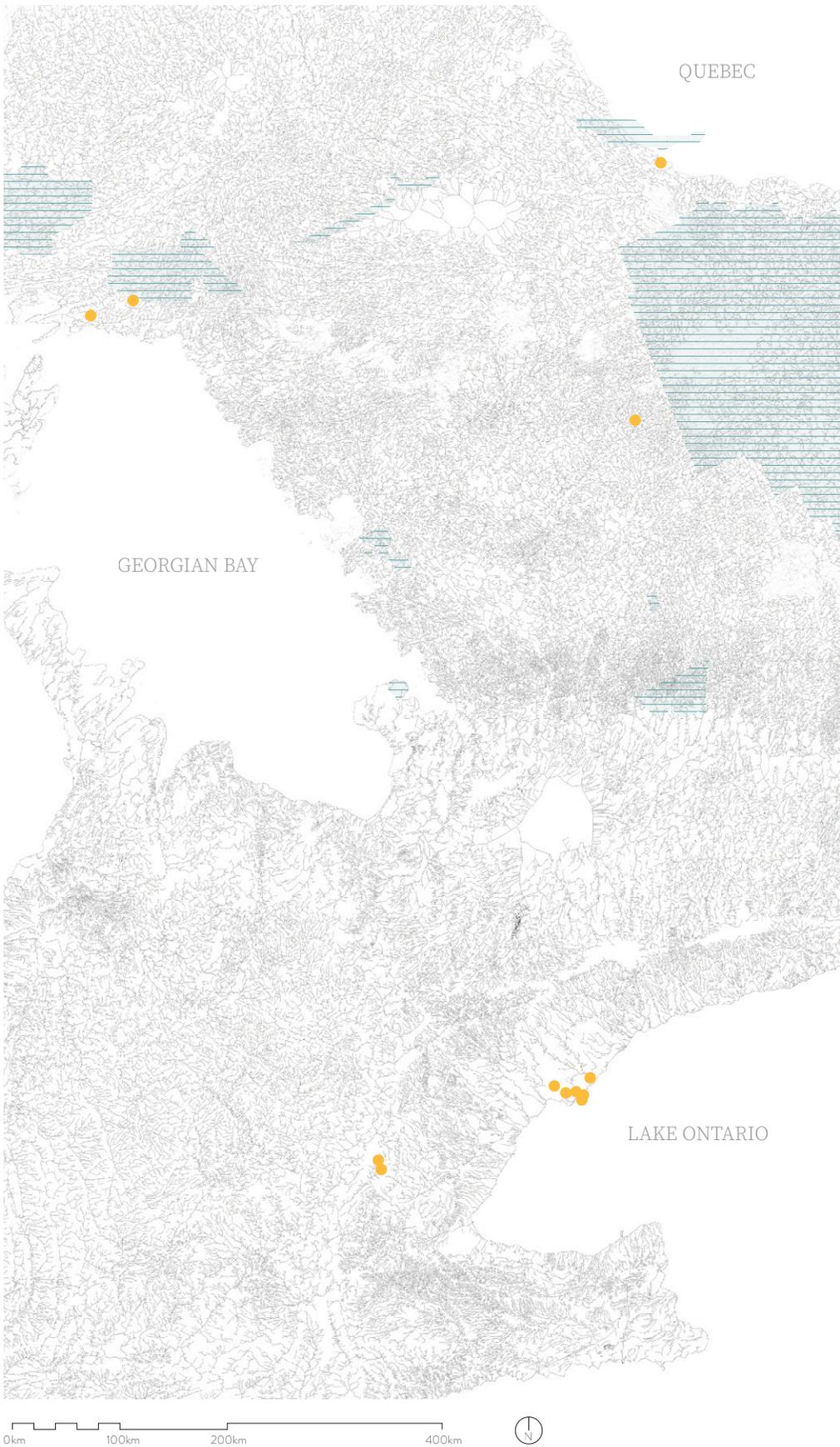
*ecological education
stewardship, advocacy
issue*

place, inquiry

*vitality
latent sites of opportunity
regeneration, life-centered
design, community
participation, adaptive
reuse
user*

03 | Spaces of Ecological Education in Southern Ontario

This graphic identifies the locations of the building case studies across southern Ontario that formed the architectural precedent for this thesis project.



“We are all architects of our own worlds. This is evident in our childhood selves: when we make dens in woods and caves, camps and sandcastles on the beach, makebelieve fortresses on rocky cliffs, houses in trees and under tables... Architecture – place-making – is a language to itself. We all have a subconscious fluency in that language, and an innate capacity for it that can be developed with practice. But for many of us that capacity has been consigned to subliminal dormancy by the dominating focus in school on words and numbers. Nevertheless, the innate architect is in us all.”⁰¹

innate architect

By empathetically navigating the intersection of pedagogy, ecology and ontology, this thesis project explores what roles regenerative architectural theory and design could have in restoring the dissemination of ecological values in the Toronto District School Board. In redefining how the facilities and operations of these vulnerable programs are conceived and designed, architecture has the capacity to ambitiously elicit both a pedagogical reform and an urban rewilding.

*pedagogy, ecology
ontology*

research objective

*pedagogical reform, urban
rewilding*

This thesis project asserts that at the intersection of ongoing pedagogical, ecological and ontological discourse exists regenerative architecture and herein lies its critical role: it offers a means of restoring relations between disciplines that have previously been severed from education as a whole. Given the impossible condition that has been established in terms of provincial support and urban conditions, it is important to consider that the value of architectural theory and design within ecological education may not be determined by a sole built artifact, but also by the informed interdisciplinary engagements, processes and ideologies that it can promote. To these ends the proposed architectural response to diminishing support for ecological education has taken the form of a quasi-architectural approach comprised of two synchronous endeavours: the conceptualization and creation of a curriculum-connected Generative Urban Design Ideas Charette that empowers the school board’s 247,000 students with much-needed agency and the design of Toronto’s first Regenerative Urban Ecology Hub that imagines an ambitious adaptive re-use of an existing archetypal school as a living building in order to inspire a new normal. By engaging with a metadesign and design in tandem, this research addresses the urgent need to redefine ecological education’s place in education as a whole today, while also offering a grounded yet aspirational vision of perpetual ecological prosperity for tomorrow.⁰²

*interdisciplinary
engagement*

quasi-architectural

*new normal
metadesign*

This quasi-architectural response to deteriorating pedagogical conditions recognizes it must not operate independently, and as such has

theoretical framework

been developed in collaboration with the site supervisor at the school board’s most remote Outdoor Education Centre, the principal of Oakwood Collegiate Institute, (an inner-city school identified as an ideal host for a pilot project) as well as an Atikameksheng Anishnawbek elder and educator. Their unique but complimentary understandings of various facets the educational system have contributed to a robust pedagogical foundation into which regenerative architectural theory can be introduced to maximum effect. The proposal has also been rooted in an extensive understanding of the existing condition of centres dedicated to ecological education, which was developed during eight seasons of working in the field along with and participant observation conducted during a number of site visits (fig.04). Lastly, the two facets of this design were ultimately guided by an appreciation for the immense beauty that has been exhibited by these centres but also an understanding that these types of spaces must be established as the new normal in education and not as the exemption (fig.05, fig.06).

The two proposals are imagined as curriculum-connected interventions that privilege architectural design and theory as a means of nurturing the next generation of ecological ambassadors. Firstly, the Generative Urban Design Ideas Charette has been conceived as a pedagogical tool that can be disseminated directly to classrooms as a means of de-stratifying and reintegrating environmental and social values within education as a whole. The charette prompts students within the Toronto District School Board to reimagine their own schools as hubs of ecological thinking by providing them the tools, resources, skills and agency needed to design and create user-generated and life-centered schoolyard interventions. The charette and resultant urban acupuncture encourage students to consider their valuable role in defining our cities’ landscapes. Secondly, the proposed Regenerative Urban Ecology Hub highlights what may come of tapping into the unbound creativity and curiosity of children. The design, born out of the prompts offered by the charette, ambitiously reimagines the archetypal Oakwood Collegiate Institute as a hub of ecological activity through an adaptive-reuse strategy that highlights ten life-centered interventions. Rather than implying that the solution to the atrophy of viable pedagogical spaces of any significant ecological function is to propose something radical and new, the design portion of this thesis project contends that a new normal must be established through the inspired reimagination of what currently exists. The ambition of the proposed charette and design is not to simply be a speculative exercise, but one that actively contributes to existing discourses, perhaps initiates new ways of thinking, and ultimately invites others

participant observation

program, curriculum-connections

*ecological ambassadors
generative urban design
ideas charette*

agency

*regenerative urban
ecology hub*

life-centered interventions

00

to engage. The realization of such a project has the capacity to inspire 247,000+ new ecological orientations.

Through this quasi-architectural response to a pedagogical condition, environmental stewardship and social advocacy can become manifested in tactile creations that not only empower a new generation of ecological ambassadors but also inspire a monumental movement towards urban regeneration and remediation. The value of this thesis project is not in determining one solution, but is instead in identifying and fortifying a potential role of architecture in exhibiting the next step towards restoring ecological knowledge and conduct within education as a whole. The creation of a Generative Urban Design Ideas Charette and the speculative iteration of one of many possible Regenerative Urban Ecology Hubs is at the core of both sustainable design and research; it empathetically considers what it will take to create a culture where ecological prosperity is a shared vision by nurturing the next generation of “green” designers. It embraces and celebrates those voices that have advocated for ecological education’s place in our world in the past, while inviting all those whose voices could help carry it in the future, regardless of how precarious its position may seem.

new ecological orientations

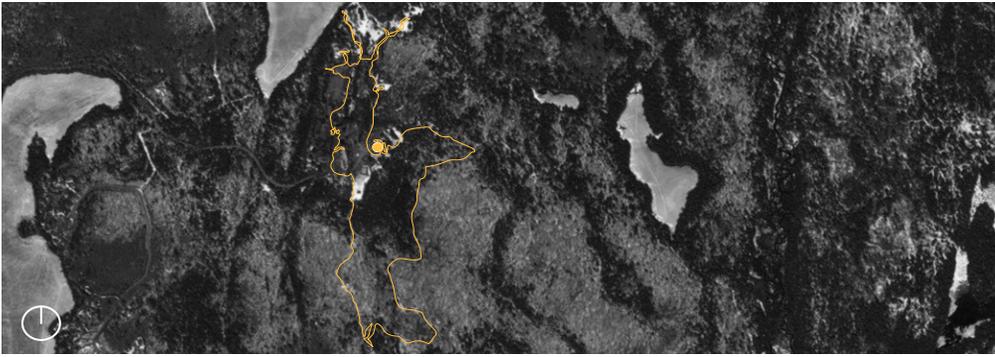
empowerment

remediation

prosperity

01 Simon Unwin, “Place Creation,” in *Children as Place-Makers: The Innate Architect in All of Us*, (New York: Routledge, 2019), 54.

02 Bruce Mau, “The Real Design is a Metadesign – A Platform for Continuous Improvement,” in *MC24: Bruce Mau’s 24 Principles for Designing Massive Change in your Life and Work*, (New York: Phaidon Press, 2020), 375.



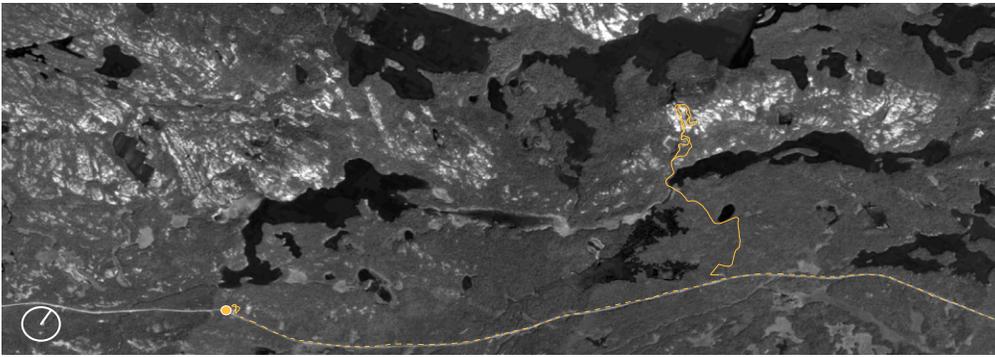
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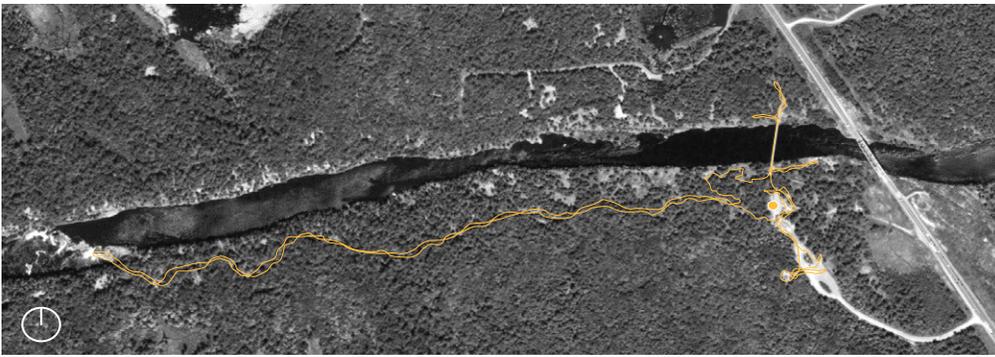
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iii.



iv.



v.

04 | Mapping of Existing Centres
Each composite image maps the unprescribed explorations of an outdoor education center during a site visit.

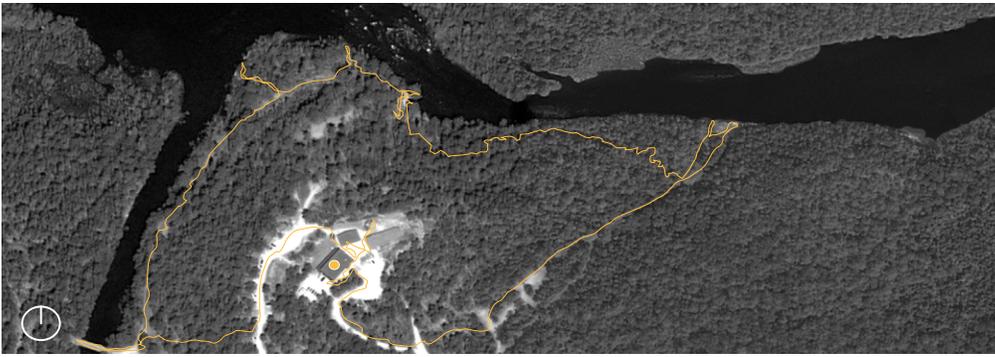
- i. Scarborough Outdoor Education School
- ii. Kortright Center for Conservation
- iii. Forest Valley Outdoor Education Center
- iv. Killarney Visitor Center
- v. French River Visitor Centre
- vi. Toronto Urban Studies Center
- vii. Hillside Outdoor Education School
- viii. Canadian Ecology Center
- ix. Island Natural Science School
- x. Killarney-Shebanoning Environmental Education School



vi.



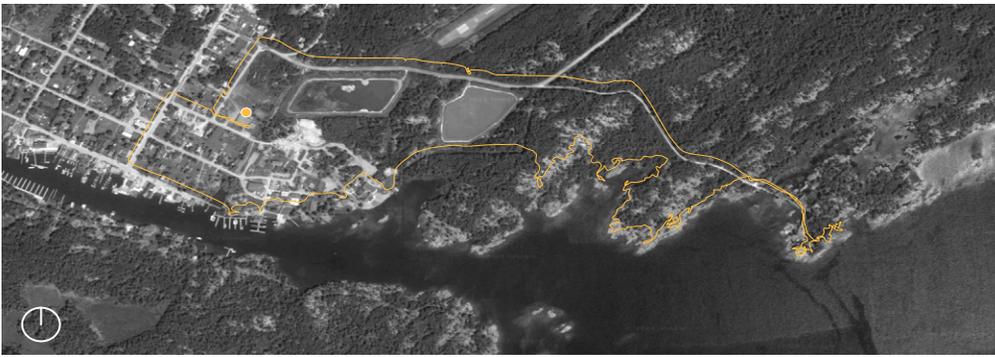
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viii.



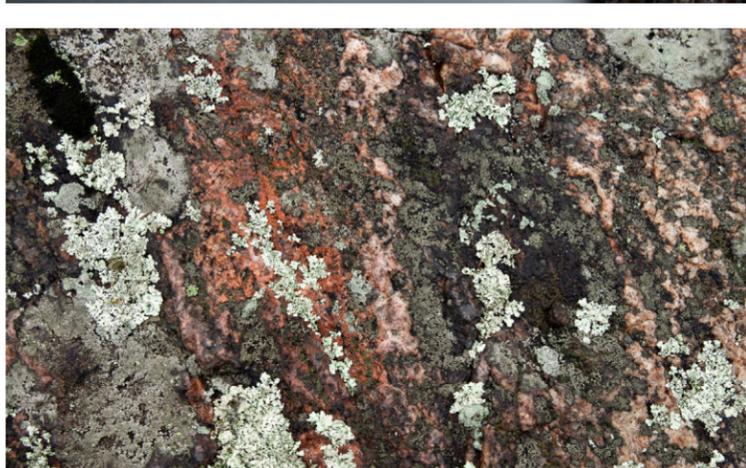
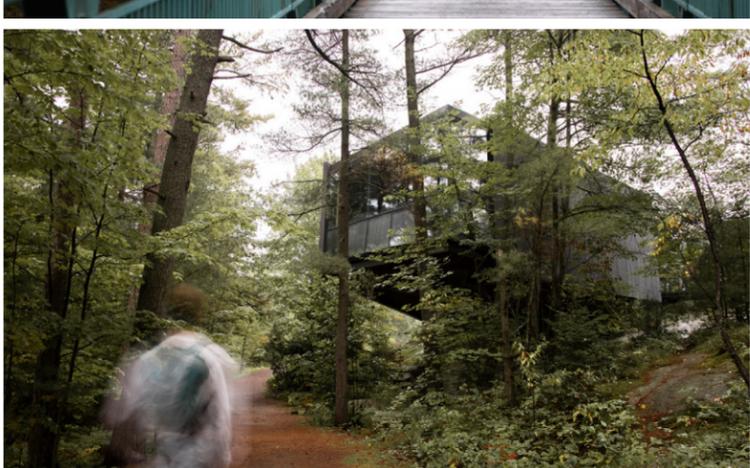
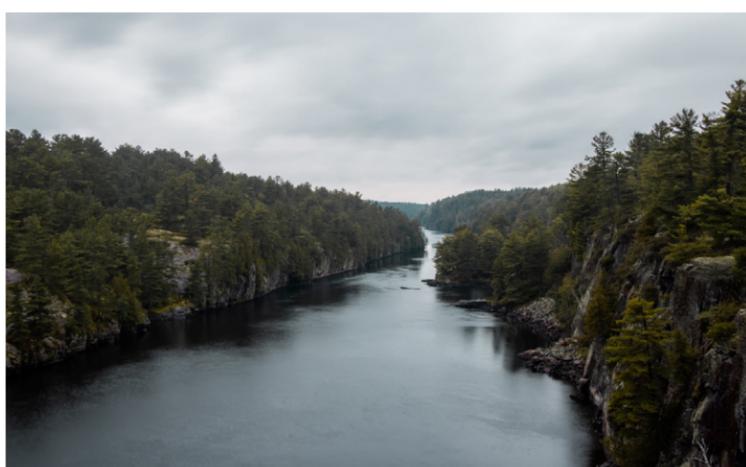
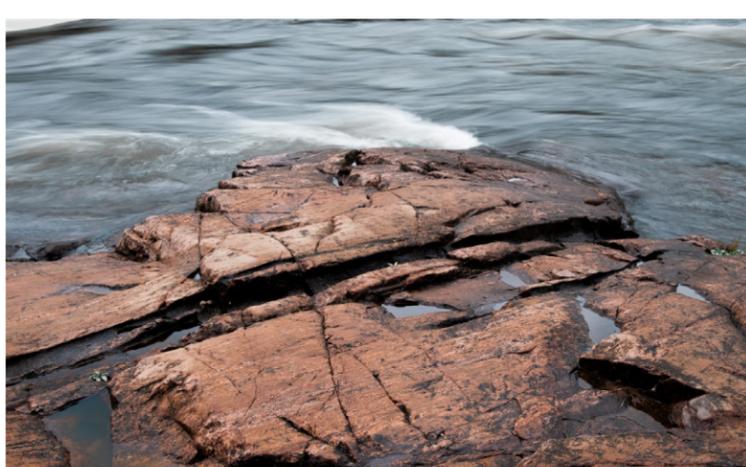
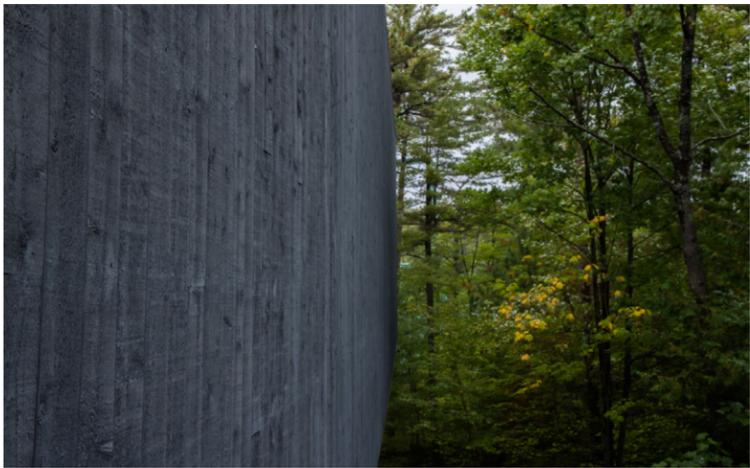
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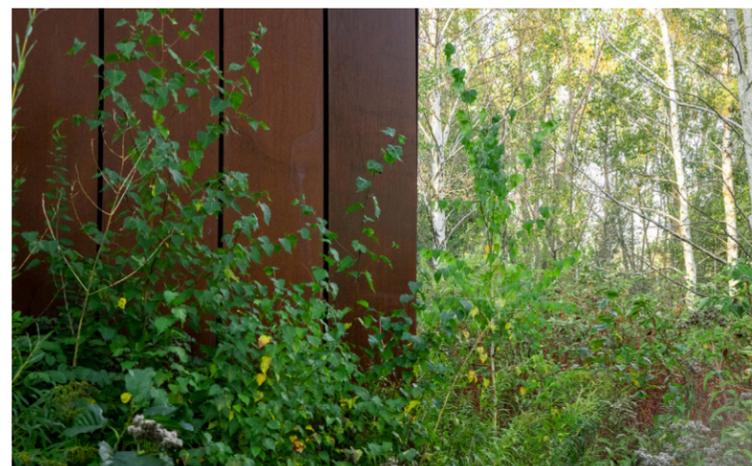
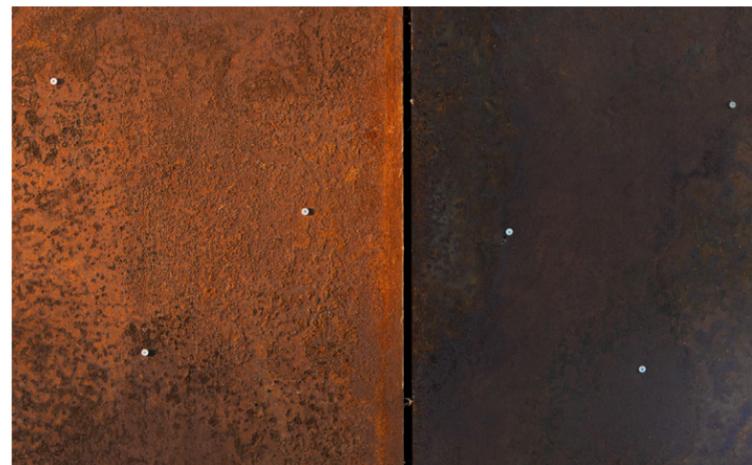
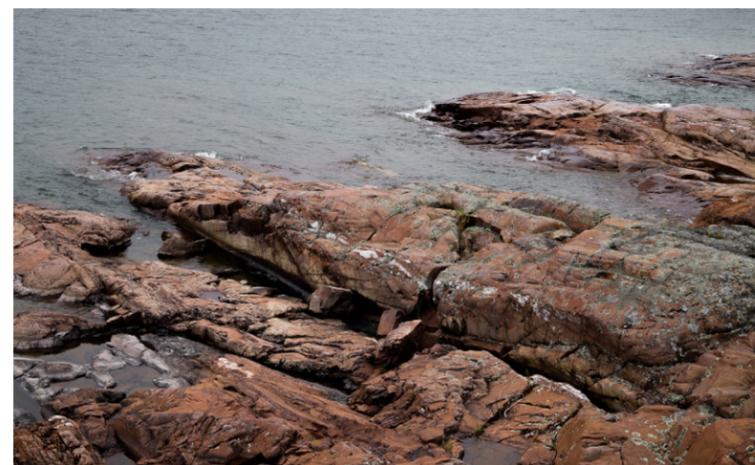
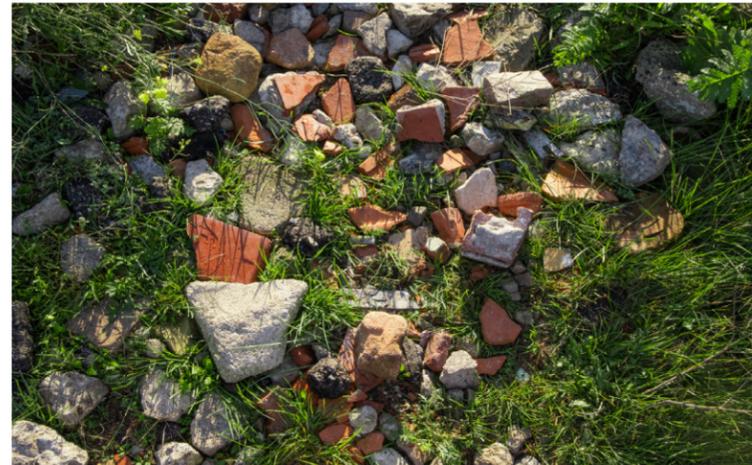
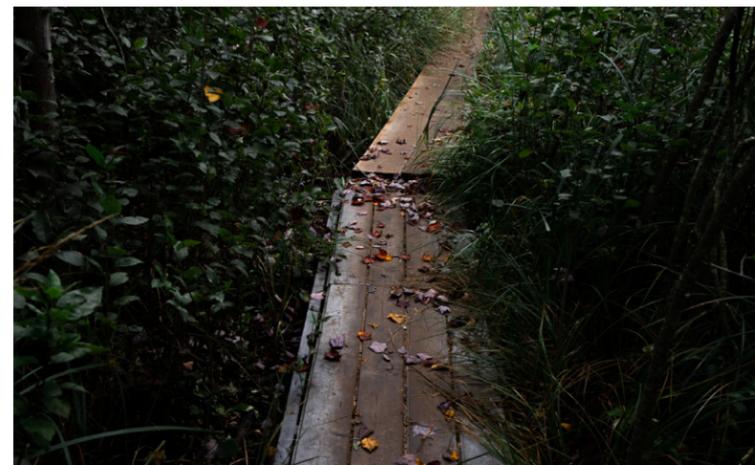


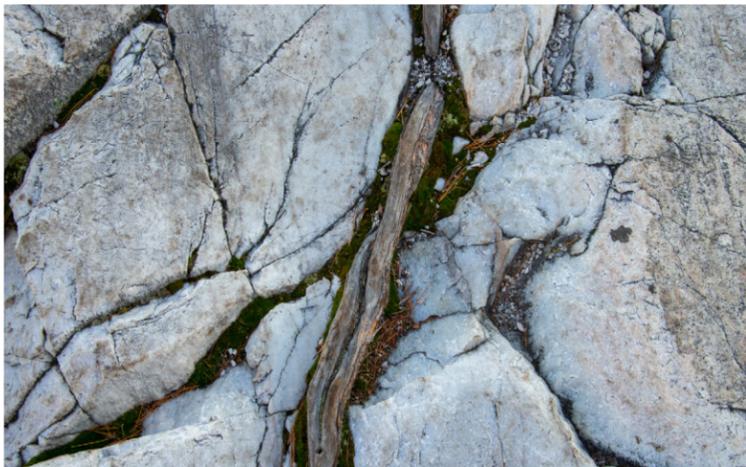
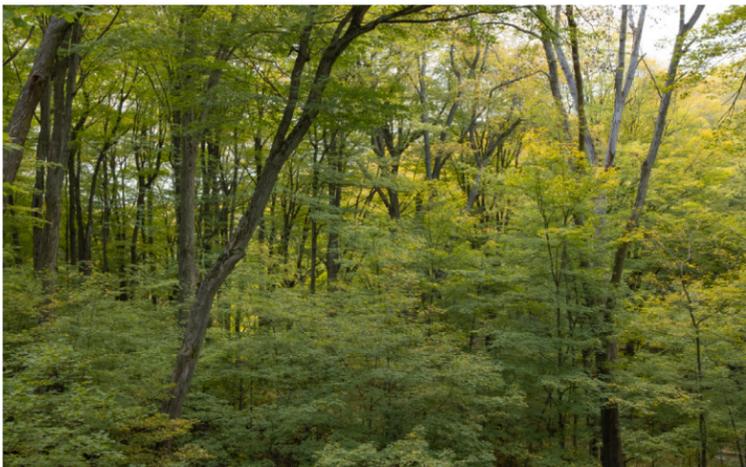
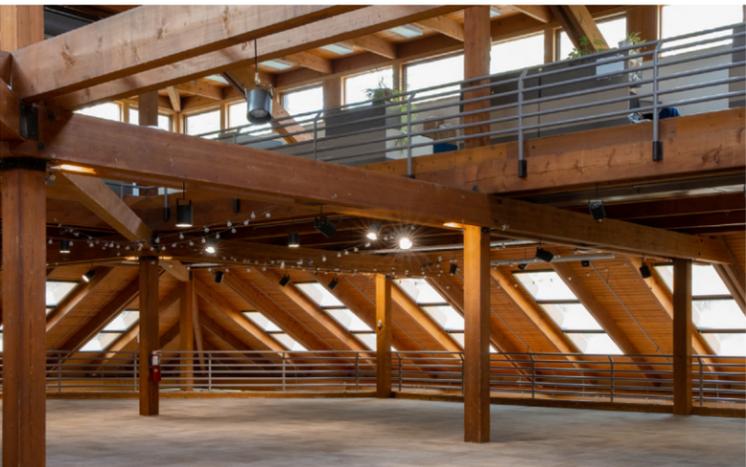
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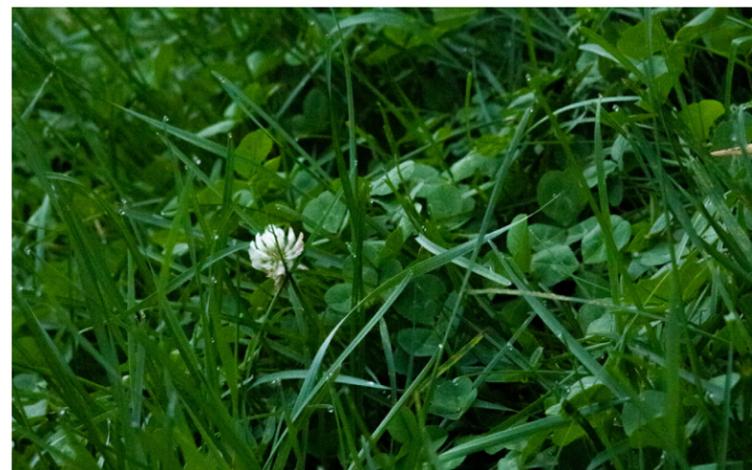
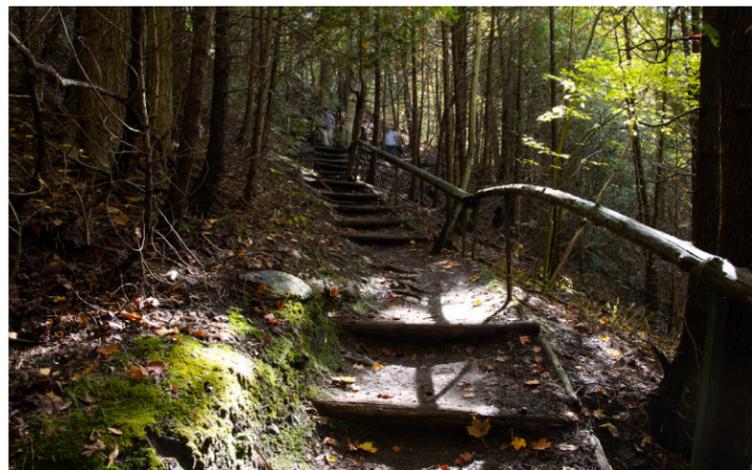
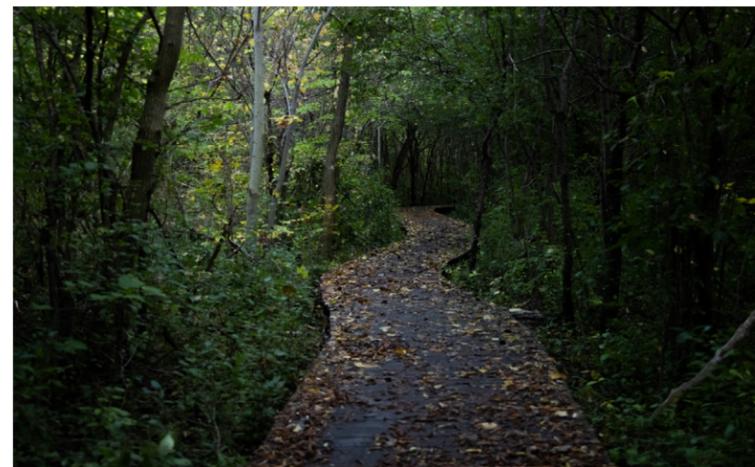
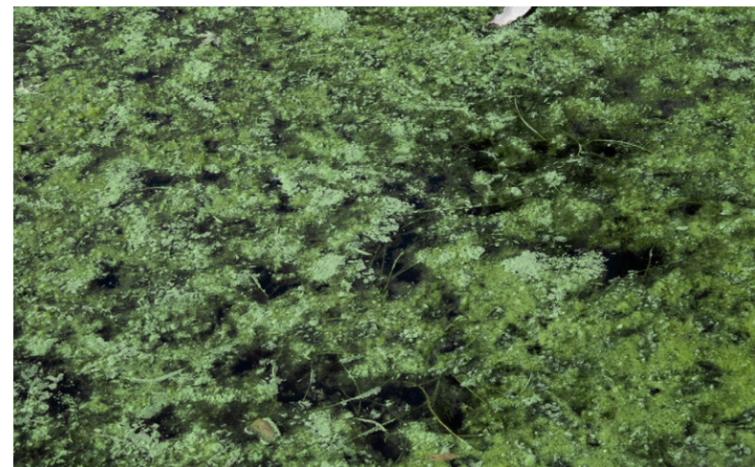
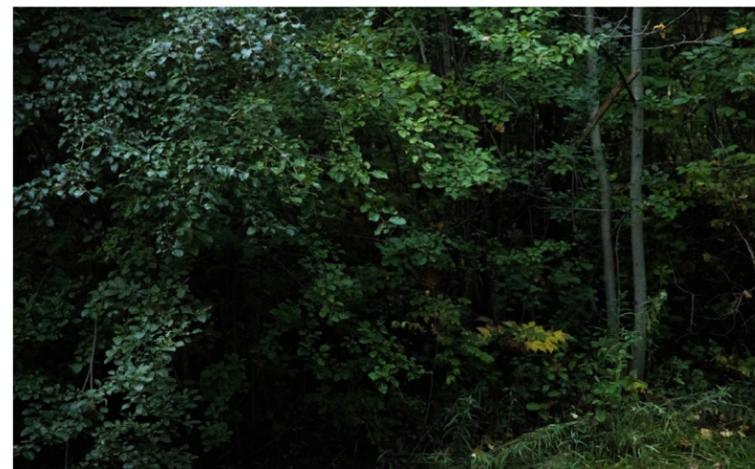
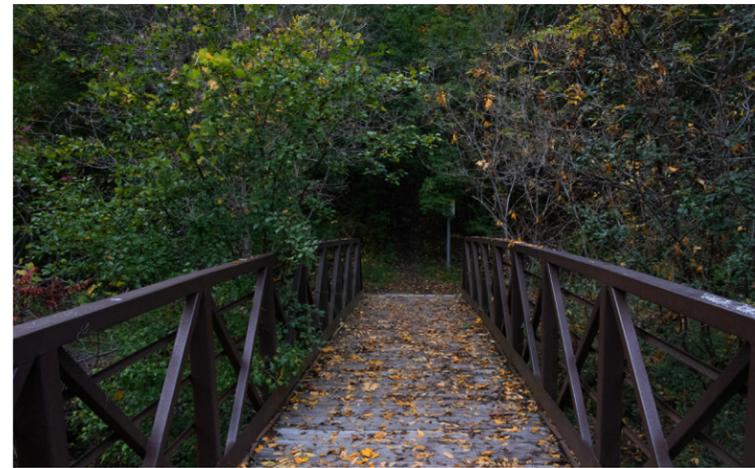
05, 06 (Next) | Photo-documentation of Existing Centres

A series of photographs documenting the architectural qualities, environmental conditions and phenomenological actors of existing spaces dedicated to the dissemination of ecological knowledge.





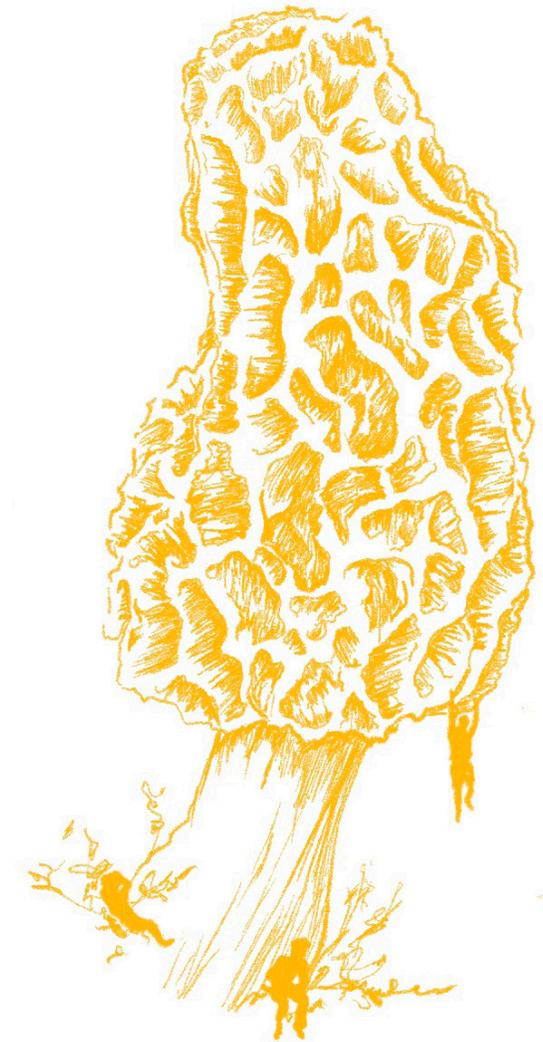




07 | The Allegory of the Morel

The second in a series of digital sketches, this drawing playfully shows three humans seeking shelter and fulfillment from a morel mushroom as a metaphor for this thesis' position that humans must restore a relation to a natural world that is not purely exploitive.

T. O'Gorman



CHAPTER 01

The Atrophy of Ecological Inquiry

Pervasive disruptions to urban populations' engagement with natural processes has incited a monstrous ecological collapse, wherein the most concentrated nodes of human inhabitants willingly contribute to the continued abuse, exploitation, and degradation of the planet's natural processes at the expense of all terrans. Provoked by this seemingly apathetic relationship, this chapter explores the systemic atrophy of viable opportunities for ecological inquiry at three scales, but ultimately asserts that there are reserves of strength to be found amidst precarious contexts. Pedagogical stratifications enacted by Ontario's Ministry of Education have largely cast opportunities to learn with nature aside, but have also shown that these administrative systems are in constant flux, adapting to emerging contextual backdrops and new values.⁰³ Perhaps that pendulum is on the cusp of oscillating back. The recent desertification of Toronto for the sake of industrial or economic progress has made immersion in natural settings particularly challenging for its occupants, and yet a wave of optimistic individuals is contesting this misconstrued purview and are, in response, offering innovative ideas on how to incite urban revitalization.⁰⁴ Perhaps these voices are soon to hold enough sway to elicit change at a massive scale. And while the architectural ramifications of these trends might offer a sinister image of what is to come, particularly of spaces dedicated to the dissemination of ecological values, they also offer a vision of an alternative path forward. Perhaps this path

could pave the way towards a shared understanding of ecological prosperity. The scales at which ecological atrophy is being conducted are varied and encompassing, but doesn’t that mean the opportunities for pedagogical reform and urban rewilding are equally varied and encompassing?

PEDAGOGICAL STRATIFICATION

Where once the values of social advocacy and environmental stewardship that come from ecological knowledge were shared generationally and intrinsically a part of life, they are today considered topics that are taught only in classrooms. Furthermore, opposed to at least being valorized and positioned as a central foundation upon which all other education takes place, these lessons are persistently relegated to the side, only to be engaged with by students at isolated and peripheral moments that are underfunded and lacking of government support. The province of Ontario’s Ministry of Education has placed these indispensable learning in a particularly precarious position at the point in time when they are most needed. Perpetual legislative restructurings, pervasive cuts to funding and misinformed policies have brought many of the centres committed to disseminating ecological values to the brink of collapse.

From 2014 to 2018, Ontario’s 41st parliament worked to restructure funding within education to offer equitable opportunities to all. Distinctive in their novel approach was the creation of the Outdoor Education Allocation in 2016, which sought to standardized the monetary support received by school boards from the provincial government to support initiatives related to specialized ecological programming.⁰⁵ This funding was recategorized under the Experiential Learning Envelope, bringing it under the umbrella of Grants for Student Needs (GSN) opposed to Educational Program – Other (EPO) as it had been previously.⁰⁶

The previous EPO model had distributed funds regionally amongst multiple factions contributing to education, with loose stipulations in a way that fostered pedagogical innovation and interdisciplinary collaboration. This model offered the coordinators of specialized educational programs an opportunity to define their own needs and allocate funds accordingly across a number of initiatives. Moreover, they often worked in tandem with other coordinators to identify synergies that could yield savings.⁰⁷ The result was a culture of knowledge and resource sharing that ultimately offered a number of holistic learning environments. The subsequent shift to the GSN model, though born of good intentions, ultimately jeopardized ecological programming in urban centers

01 by instilling a system whereby each faction needed to work independently to maximize the support they were offered.

The GSN model introduced in 2016, which is still in place today, conversely offers the tailored Outdoor Education Allocation directly to the province's school boards and is structured around a stipend of \$5,000.00 and an enrollment-based grant of \$8.51 per student each year.⁰⁸ Given the vast discrepancies in the average daily enrollment (ADE) between the province's 72 urban and rural school boards, this amount offers considerably different opportunities to different regions. Further exacerbating the dire condition is the negative correlation between densely populated urban centres and zones of ecological function. While smaller rural school boards' whose facilities are encompassed by natural areas are able to make greater use of the Outdoor Education Allowance, their need is considerably less than those of greater metropolises such as Toronto where the barren urban fabric already diminishes the school boards' capacities to offer these immersive learning opportunities. Where once ecological education was at least granted the opportunity to integrate itself with normative curriculum expectations by flexible funding, it is now systemically cast aside, left to fend for itself.

\$8.53 ANNUAL PROVINCIAL FUNDING
PER STUDENT TO SUPPORT
OUTDOOR EDUCATION INITIATIVES.

In tandem with the compartmentalization of specialized programs in 2016, unprecedented cuts to education under the following government further diminished the capacity of school boards to offer ecological teachings effectively. The Toronto District School Board in particular has had to make dramatic decisions to mitigate damages, many of which have come at the cost of specialized programs. Forecasted for the 2020-2021 scholastic year was an operating budget of \$3,436,000,000.00, of which nearly 90% will come in the form of the aforementioned GSNs.⁰⁹ Perhaps unsurprisingly, just over .1% of those grants made it towards the budget for outdoor education – down to \$4,161,692.00 from \$7,843,699.00 from the year prior.¹⁰ The resultant site closures, staff layoffs and program reorganizations within the Toronto District School Board's Outdoor Education Program further entrenched the precarious position they'd been put in, calling in to question the future of ecological pedagogy as a whole amidst pervasive attacks against their operations and facilities.

A dangerous precedent of persistently relegating ecological education to the side is being set. At a time when it is largely understood that the greatest challenges humankind will face in the coming decades or centuries will only be resolved with a newfound relation between ourselves and the world we inhabit, should there not be a greater emphasis on setting up the conditions to support the next generation of ambassadors in discovering their own role in ecological prosperity? Do the coming climate crises, which will undoubtedly permeate all aspects of our lives, not warrant the slightest foresight to reintegrate ecological values in education? If there were ever a place to offer new understandings of human dwelling, surely a place of education would be it – particularly in urban regions where systems of significant ecological function are scarce but where a capacity for change is abundant.

URBAN DESERTIFICATION

Few who live in urban centres can say they have meaningful interactions with untouched wilderness on a regular basis. A legacy of exploitation for the sake of progress has rendered all but the most inaccessible of sites into barren urban landscapes. Productive land is plowed, bedrock blasted, resources extracted and streams buried. On top of it all is laid a fresh grey blanket of concrete, with just a few gentle cracks left behind as a reminder of once was. At the root of it all is one species – humankind – increasingly aware of its trampling footstep but still rushing to reap the spoils. And yet, that is not to say urban concentrations are without cause or hope. In fact, it is quite the opposite. Cities are incubators of imagination, optimism and change. Such ingenious development has shown that humankind, when armed with resources and incentive, is capable of greatness – we need only tip the scales in ecology’s favour. Those few pockets of life that have been left undisturbed stand as a reminder of what there is to preserve – we need only let those breathe and make room for more. And most importantly, those who so readily occupy these barren landscapes are, now more than ever, rising up to demand a new urban fabric – we need only offer them the analysis, tools and framework to do so effectively. It is with this optimism that urban populations will be able to enact the urban rewilding that is so desperately needed.

The city of Toronto presents itself to the world as a ‘City within a Park’, and yet it seems that what is needed is cities that are parks; the two can no longer be juxtaposed against once another as though the former must take away from the latter.¹¹ Further, is the ideal of inhabiting a park a vision that will

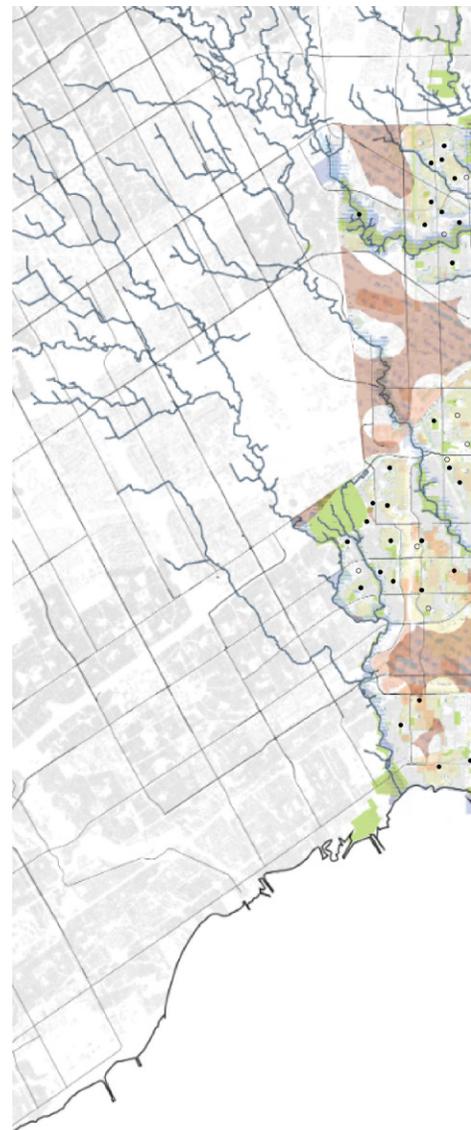
01

carry us towards ecological remediation? Amidst continuous urbanization and the resultant desertification of productive land, the ambition should be to create regions with intrinsic ecological function, not manicured spaces designed to timidly engage the senses. This is not to say that Toronto’s parkland does not play a valuable role in enticing the city’s massive population outdoors, (and indeed there are many exceptional examples of spaces doing just that) but that its potential for ecological regeneration could be much greater. The city of Toronto’s own Department of Parks, Forestry and Recreation have identified gaps in their masterplan, and have set out a framework to enact their Parkland Strategy vision: expand, improve, connect, include.¹²

The department’s manifesto lays out a clear approach to aligning the recreational desires of people with the ecological needs of the city. Through expansion the framework is actively trying to support the growth of its park system into identified gaps. With its improvement goals the framework recognizes that the function of these spaces must not only meet the needs of humans, but of all terrans. By offering seamless connections from one park system all others, the framework ambitiously seeks to make naturalized spaces the normal, rather than the exception. And lastly, through inclusion the Parkland Strategy offers a means of providing equitable access to these spaces within a remarkably diverse city. While these spaces have historically been segregated and compartmentalized by a dated prioritization of industrial or economic progress, there is now a glimmer of a systemic approach towards remediation.

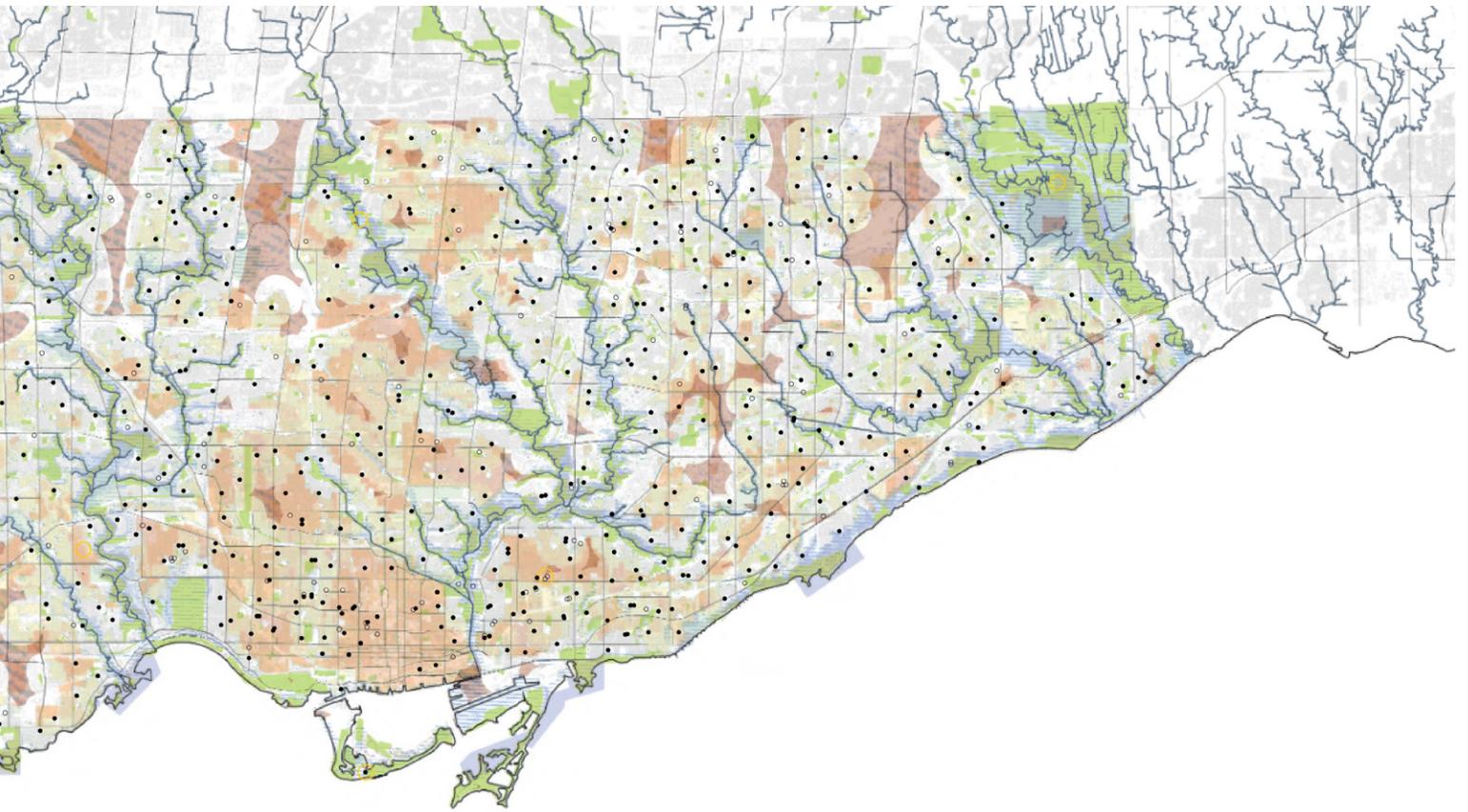
Supporting this framework requires prompts backed by quantifiable data and expertise beyond just one city department or even of a profession. An interdisciplinary definition of urbanization – one that can speak to the elusive and multifaceted aspects of urban life – must be defined primarily to understand what the current condition is, but also to offer an informed path forwards. Toronto is home to countless scholars, planners, biologists, conservationists, designers, ecologists, environmentalists, landscapers, ornithologists, hydrologists, all eager to contribute their understanding of the urban ecology we play a part of. The city, though void of a considerable amount of life, is not devoid of humans. Toronto may be the region most in need of regeneration, it is also perhaps the most well-equipped with inspiration, knowledge, incentive and capacity for action.

Graphic data produced by the University of Toronto’s John H Daniels Faculty of Architecture, Landscape and Design, the City of Toronto and independent researchers offers insights as to where action is most needed. The layering of graphic data pertaining to watersheds, aquatic biodiversity,



08 | Defining Urbanity in Toronto

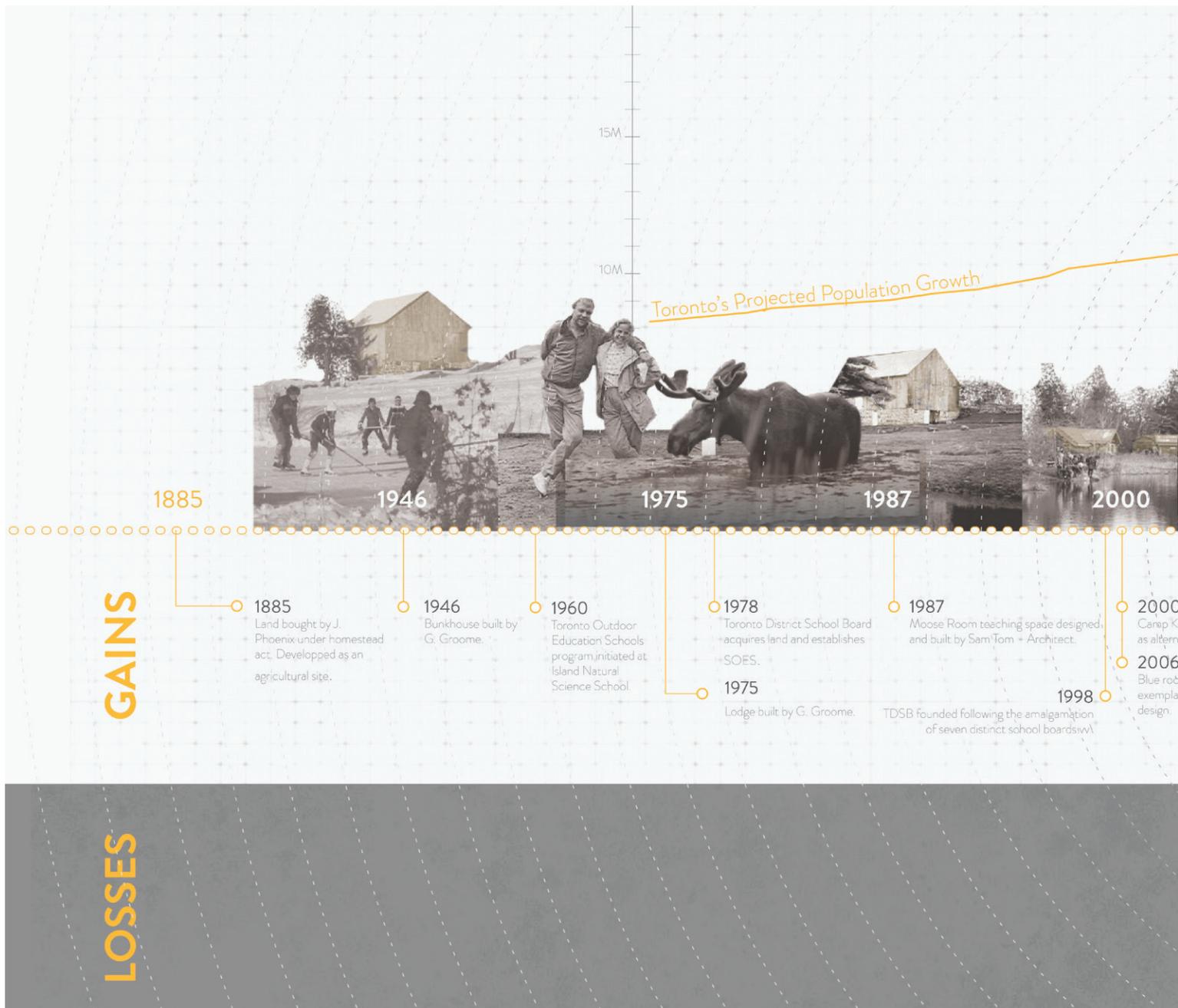
This composite mapping exercise draws on research creation from the University of Toronto, Toronto’s department of Parks, Forestry and Education as well as independent scholars to define the urban conditions relevant to this thesis project, and later to identify a viable incubator site for the proposed architectural intervention.



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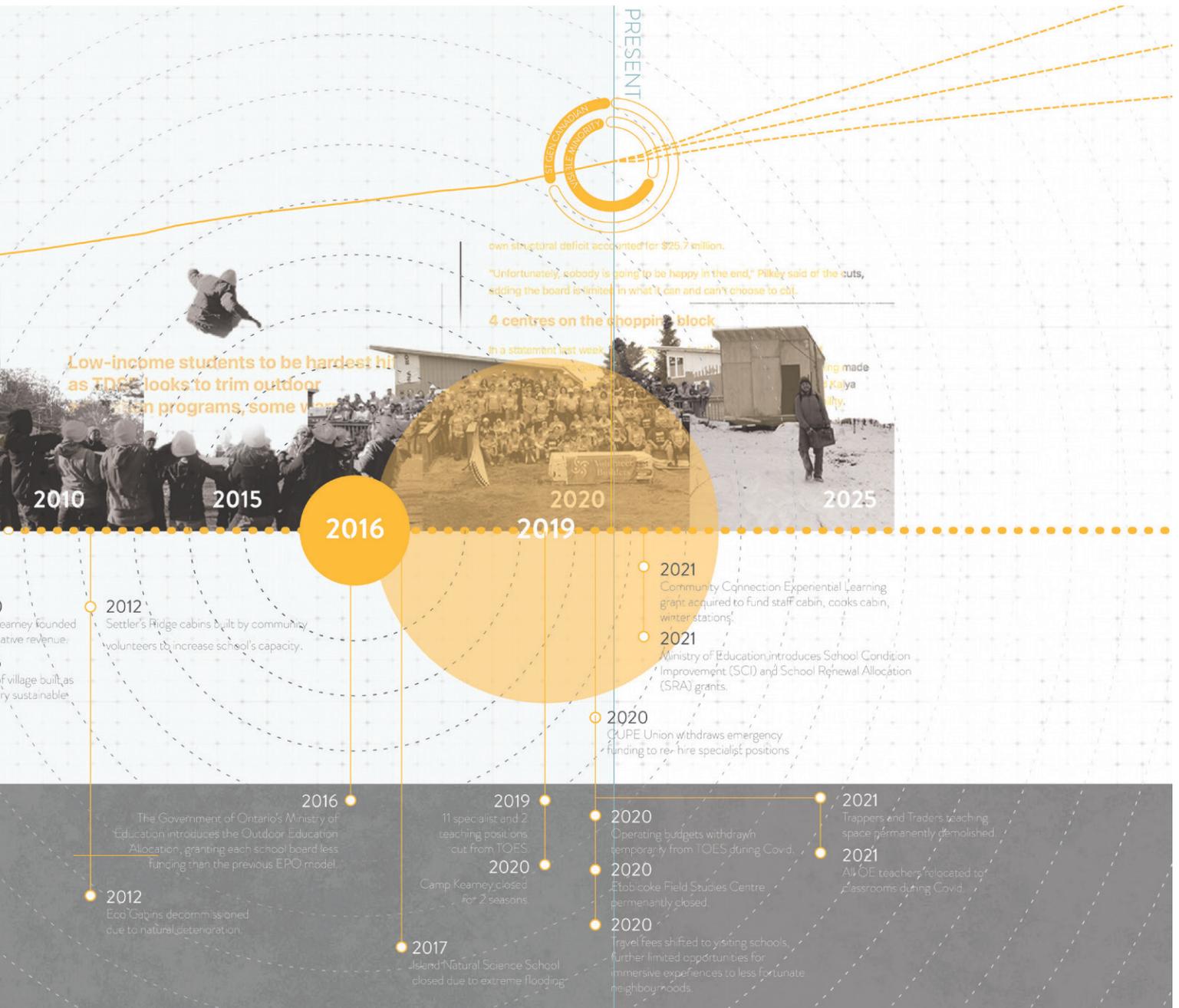
flora, air quality, natural conditions, avian migrations, land cover, mobility, terrestrial ecologies, food deserts, waste management, topography and human demographics begins to illustrate the need for concentrated rewilding efforts in certain pockets within the city (fig.08).¹³ By defining urbanity according to a set of predetermined priorities, any forthcoming proposal can be both informed and deliberate.

The impossible condition that has been established by provincial legislative disruptions only exacerbates what has existed for many decades in Toronto – a lack of regions with significant ecological function that could be intimately engaged with by the city’s immense population. And yet, rising up



to the challenge are all the aforementioned voices whose pleas for ecological regeneration are inciting slow but persistent change across Toronto in new and unexpected sites.¹⁴ The questions then become: will it be enough, and has it come early enough, to redefine urban populations’ orientations in ecological space before its total collapse? What spaces will remain to offer these experiences to the next generation of ambassadors? Pedagogical stratifications and urban desertification have had architectural ramifications that cannot go unnoticed. How do we retain the built and natural landscapes conducive to ecological thinking when they are so readily disregarded and are actively degrading?

09 | Operation and Facility Interruptions at the Scarborough Outdoor Education School (Below)
This digital composition overlays photos from the Scarborough Outdoor Education School’s archive with press publications and a loose understanding of the site’s history to articulate the rapidly deteriorating condition of this center for ecological education, and others like it.



01 ARCHITECTURAL RAMIFICATIONS

It is the architectural ramifications of pedagogical stratification and urban desertification that are of most pressing concern. The built spaces dedicated to disseminating ecological values of environmental stewardship and social advocacy stand as a testament to our commitment to carving out space in the urban fabric for ecological inquiry; their continued dismissal, distancing and depreciation will most dramatically diminish students' opportunities to engage meaningfully with the natural world. So as tragic as the pervasive compartmentalization of these centres for ecological inquiry is, at least they can still be seen and appreciated today as examples of what should be. Program reorganizations, staff layoffs and site closures have brought the Toronto District School Board's Outdoor Education Schools to the brink of collapse. And while its nine remaining centres' educators and specialists have shown remarkable resiliency in the face of neglect, the systemic oppression against them is just too strong. It is not time to lose hope in these spaces, however, but instead to reimagine how it is that their indispensable teachings can be regenerated and manifested in a new architectural typology for sustained dissemination. Fortunately, ecological regeneration is not a phrase uncommon to outdoor educators.

The Toronto Outdoor Education School program has a 62-year legacy of supporting ecological learning in the Toronto District School Board.¹⁵ The nine remaining centres each take pride in the unique place-based programs they offer and are constantly working towards fostering core curriculum connections - be them to the maths, sciences, arts, social studies, history or even languages.¹⁶ Furthermore, the Toronto Outdoor Education Schools actively seek to embody the Toronto District School Board's pillars of equity, achievement and well being.¹⁷ These centres ultimately encourage outdoor play as a pedagogical device to be used in tandem with classroom lessons to foster an intimate understanding in student's of the real-world applications of what they are learning. The result is an increased appreciation for the world they inhabit, and their role in cultivating its ecological prosperity. Immersive experiential learning that happens beyond the confines of a classroom in a tactile, phenomenologically engaging manner is the sole spiritual handhold in otherwise mundane educational paradigm.¹⁸

Despite the unique place-based pedagogies these centres offer and the critical relation they hold to the Toronto District School Board as a whole, they are continuously rendered inoperable by the governing bodies and exploited as a source of labour. Amidst regressive funding reorganizations, provincial cuts to education and a global pandemic, the Toronto Outdoor Education Schools have

been significantly weakened.¹⁹ Centres have been closed, outdoor specialist positions terminated, teacher positions relocated to classrooms, operational budgets put on hold, catchment areas dissolved, transit compensations ceased, site repair projects suspended, new builds rejected, and above all: student visits have been suspended to many of the sites – for nearly two years now (fig.09).²⁰ This seemingly impossible condition is not entirely novel, however. The Toronto Outdoor Education Schools have long been presented an impossible task, whereby its centres are expected to be the sole disseminators of ecological values for every single student in the nation’s largest school board. This atrocious stratification of responsibility and of knowledge, on top of unprecedented recent disruptions, warrants further explanation.

In the most recent academic year, the Toronto District School Board reported an Average Daily Enrollment (ADE) of just over 247,000 students.²¹ Following the permanent closure of the Etobicoke Field Studies Centre in 2020, nine centres remain to offer these indispensable learning opportunities.²² As such, each centre can be expected to host just under 28,000 students each year. Given an average class size of 30 students in addition to the capacity of two classes each centre is capable of hosting at once, 457 days would be needed to offer each class an opportunity to visit one of these remarkable sites - the 2020-2021 academic year had 196.²³ It would take two years and four months to offer every student within the board a single, six-hour stay at one outdoor education centre. At no fault of the centres themselves, this division of labour and allocation of resources is deplorable. This is the result of systemic depreciation of ecological education. This is the impossible condition that must be overcome. This is the value that has been given to the spaces that will prepare our children for the task of renewing a common world.

**2.33
YEARS** TO PROVIDE EACH STUDENT IN THE
TORONTO DISTRICT SCHOOL BOARD
A ONE-DAY VISIT TO A CENTRE
DEDICATED TO THE DISSEMINATION OF
ECOLOGICAL EDUCATION.

What is needed now more than ever is an alternative approach to the design and operations of ecological teaching environments. Tools, agency, values and knowledge are owed to the next generation of ambassadors who will save our natural, social and built landscapes from ruin. Each individual must assume responsibility for this task of establishing a shared vision of ecological prosperity, and offer what contributions they can to meet these ends.

- 03 Ontario Ministry of Education, "Vision," in *Acting Today – Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools*, (Toronto: Queen's Printer for Ontario, 2009), 6.
- 04 David Suzuki, "Rewilding can help heal wounds we've inflicted on nature," *NowToronto*, October 6, 2021, <https://nowtoronto.com/news/rewilding-can-help-heal-wounds-weve-inflicted-on-nature>
- 05 Ontario Ministry of Education, "Outdoor Education Allocation," in *Education Funding: Technical Paper 2016-2017*, (Toronto: Queen's Printer for Ontario, 2016), 68.
- 06 *ibid.*
- 07 "Legislative Milestones," Outdoor Education Task Force, Toronto and Region Conservation Authority, accessed May 3, 2022, https://laserfiche.trca.ca/WebLink/0/edoc/1662902/OETF_1-19_Intro_Presentation_2019-10-07.pdf
- 08 Ontario Ministry of Education, "Outdoor Education Allocation," in *Education Funding: Technical Paper 2020-2021*, (Toronto: Queen's Printer for Ontario, 2020), 83.
- 09 Toronto District School Board, "2020-2021 Budget Detail by Department," in *2020-2021 Operating Budget*, (2020), 142. https://www.tdsb.on.ca/Portals/0/docs/5_1.pdf
- 10 *ibid.*
- 11 City of Toronto Parks, Forestry and Recreation, "Vision for Toronto's Park System," in *Parkland Strategy Final Report*, (Toronto: City Planning, 2019), 7, <https://www.toronto.ca/wp-content/uploads/2019/11/97fb-parkland-strategy-full-report-final.pdf>
- 12 City of Toronto Parks, Forestry and Recreation, "Guiding Principals," in *Parkland Strategy Final Report*, (Toronto: City Planning, 2019), 8, <https://www.toronto.ca/wp-content/uploads/2019/11/97fb-parkland-strategy-full-report-final.pdf>
- 13 Integrated Urbanism Studio, "Interactive Mapping," University of Toronto John H. Daniels Faculty of Architecture, Landscape and Design, accessed May 2, 2022, <https://academic.daniels.utoronto.ca/urbanism/map/>
- 14 John Carley, "The Evolution of Advocacy," in *Accidental Wilderness: The Origins and Ecology of Toronto's Tommy Thomson Park*, ed. Walter Kehm, (Toronto: University of Toronto Press, 2020), 73-84.
- 15 Veronica Uzielli, "Toronto Outdoor Education Schools and Related Topics," interview by Tristan O'Gorman, October 13, 2021.
- 16 "Toronto Outdoor Education Schools," Toronto District School Board, accessed May 2, 2021, <https://schoolweb.tdsb.on.ca/toes>.

Of the remaining nine Outdoor Education Schools, four are day centres and five are overnight centres. They are: Forest Valley Outdoor Education Centre, Hillside Outdoor Education School, Toronto Urban Studies Centre, Warren Park Outdoor Education Centre; and then: Etobicoke Outdoor Education Centre, Island Natural Science School, Mono Cliffs Outdoor Education Centre, Scarborough Outdoor Education School, Sheldon Centre for Outdoor Education. Each has their entire program database available publicly.

- 17 Veronica Uzielli, "Toronto Outdoor Education Schools and Related Topics," interview by Tristan O'Gorman, October 13, 2021.
- 18 Art Petahtegoose, "Atikameksheng Anishnawbek Ecological Knowledge and Pedagogy," interview by Tristan O'Gorman, March 28, 2022.
- 19 Veronica Uzielli, "Toronto Outdoor Education Schools and Related Topics," interview by Tristan O'Gorman, October 13, 2021.
- 20 *ibid.*
- 21 "About Us," Toronto District School Board, <https://www.tdsb.on.ca/About-Us>.
- 22 "Toronto Outdoor Education Schools," Toronto District School Board, accessed May 2, 2021, <https://schoolweb.tdsb.on.ca/toes>.
- 23 Toronto District School Board, "Revised School Year Calendar 2021-2022," in *Report 04-21-4088*, (2021), 7, [https://www.tdsb.on.ca/Leadership/Boardroom/Agenda-Minutes/Type/A?Folder=Agenda/20210428\(1\)&Filename=5.pdf](https://www.tdsb.on.ca/Leadership/Boardroom/Agenda-Minutes/Type/A?Folder=Agenda/20210428(1)&Filename=5.pdf)

10 | The Allegory of the Pebble

T. O'Gorman

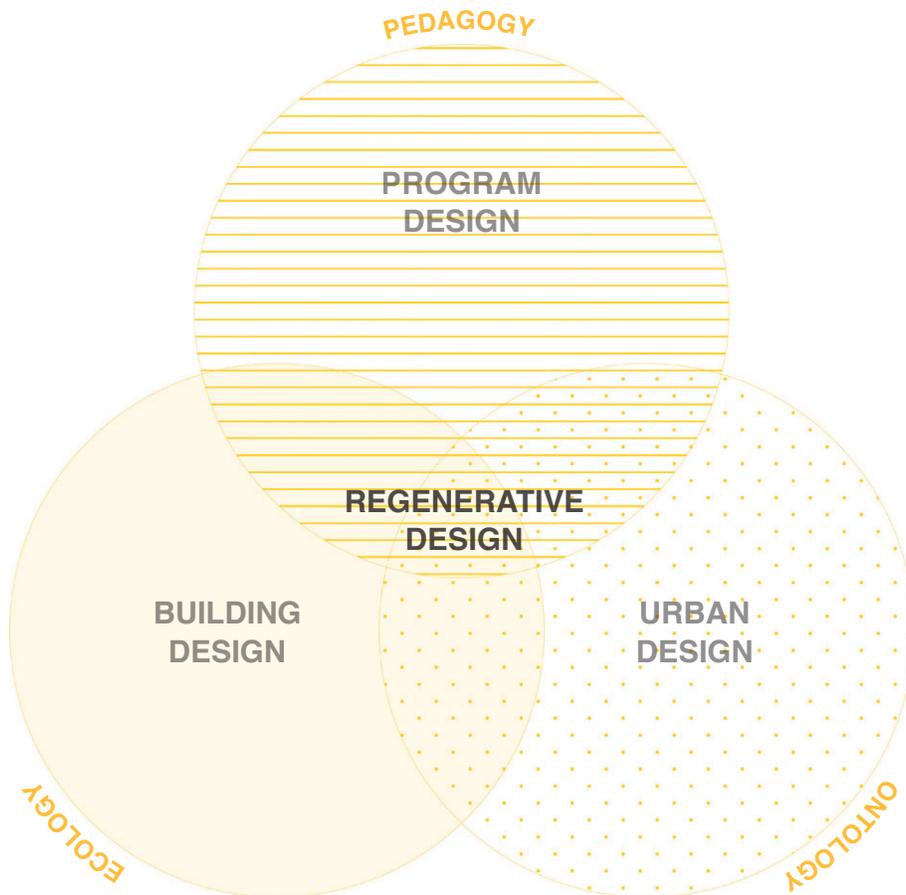
The third in a series of digital sketches, this drawing playfully depicts one person who has recently summited a small pebble and is now seeking new horizons - echoing the idea presented by this thesis that what is most needed is a plethora of opportunities for people to discover nature at their own pace and come to their own understandings of the world they occupy.



CHAPTER 02

The Reimagination of Pedagogical Conduct

Amidst growing uncertainty for the future of outdoor education in the Toronto District School Board, it is not enough to simply propose a new architectural intervention whose supposed creation will miraculously reintegrate ecological values with education as a whole. To do so would be to act in willful disregard for the impossible responsibility dedicated centres of ecological education have been forced to carry, let alone the blatant neglect that has been exhibited by those whose financial and operational support would be needed. What is required instead is a radical approach to the dissemination of ecological values; an approach that does not presume support in the future, but instead generates vitality for itself, today. The challenges being presented to centres of ecological education are multifaceted and transcend the purview of any single profession, but architecture has a unique agency that can be employed to set up the conditions for greater change by initiating an interdisciplinary collaboration through design that tackles the atrophy of viable pedagogical spaces at multiple scales. At the intersection of ongoing pedagogical, ecological and ontological discourse exists regenerative architecture and herein lies its critical role: it offers a means of restoring relations between disciplines that have previously been severed from education as a whole (fig.11). Important to consider, therefore,



11 | The Interdisciplinary Scope of Regenerative Design
 This digital drawing graphically expresses the theoretical framework that has informed this thesis project, which is that regenerative design operates at the intersection of pedagogical, ecological and ontological discourse.

is that the value of architectural theory and design within ecological education in increasingly urban contexts may not be determined solely by a built artifact, but also by the informed interdisciplinary engagements, processes and ideologies that it can promote. The real design here is a metadesign.²⁴

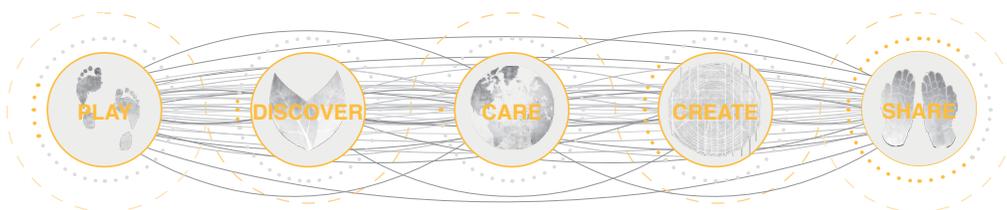
INTERDISCIPLINARY IDEOLOGIES OF REGENERATION

Architecture has a unique agency, but one that is undoubtedly informed by the contributions of other disciplines. Through the lens of regenerating an appreciation for ecological knowledge and offering a medium for children to engage with it, architecture can probe complimentary discourse in order to apply its own methodologies and ideologies in a manner that is comprehensive, empathetic and above all in this case: life-centered.²⁵ Regenerating a pedagogical approach that encourages self-discovery, haptic play and spiritual teachings is perhaps most critical given the dire state of ecological education in the Toronto District School Board. Embedded in this, of course, is the ambition to reinstate a baseline ecological orientation that empowers

02 students to realize their own role in cultivating a common world.²⁶ Thus the endeavor of regenerating ecological prosperity engages in an ontological inquiry too. Rather than imagining the architectural process of inciting new ontological paradigms, perhaps the stronger approach would be to study and imagine the best possible end goal, and work backwards from there. Engaging in each of these three disciplines strengthens architecture's agency and capacity for positive change.

Regenerating a pedagogical hierarchy that values ecological knowledge is imperative. The notion of regenerative design should manifest itself at the scale of the classroom and its programs through the generative inquiries and creations they foster. A policy framework has been laid out by the province of Ontario that outlines a path to reintegrating community-connected experiential learning with educational initiatives, but the link has yet to be made with ecological values and the centres that already support these types of opportunities.²⁷ The framework is grounded on the pillars of participation, reflection and application, and positions the three as mutually affirming learning objectives. This framework can be superimposed on the existing program database offered by the Toronto Outdoor Education Schools to highlight the synergies that have yet to be explored. Of over 300 experiential learning programs offered by the school board's dedicated centres, nearly all can be organized into a similar but expanded foundation based on five pillars: play, discover, care, create and share (fig.12).²⁸ This expanded framework carves space for creation as a pedagogical tool, but otherwise retains the general emphasis on haptic engagement. The emergence of experiential learning as a topical pedagogical approach is encourage because it offers a means of reintegrating ecological values with education as a whole, thus regenerating its status as a valued and central pillar of early childhood development.²⁹ Further, the framework clearly articulates a need to reinstate place-based learning.³⁰ Whether it be a local, national or global sense of community, the privileging of a *genius loci* offers yet another means of reintegration ecological education, whose purview is to evoke a profound sense of place in children.³¹ Lastly, the framework outlines a need for community collaboration. It recognizes the value exposure to alternative worldviews and expertise has in cultivating mindful students. Being informed by emerging pedagogical theory and practices regarding experiential learning, place-based discovery and community collaboration offers the architectural design process an opportunity to become an effective tool in pedagogical design too. These relations prompt consideration towards the conditions and resources required

300 EXPERIENTIAL AND ECOLOGY - BASED PROGRAMS OFFERED BY THE TORONTO OUTDOOR EDUCATION SCHOOLS.



12 | The Restructuring of Existing Programs

This digitally produced diagram highlights the synergies between each of the proposed reclassifications of experiential learning opportunities that was established during an exhaustive review of current TDSB program offerings.

to provide students with varied and meaningful opportunities to engage with ecological inquiry.

Regenerative design in a pedagogical setting should, it follows, be tailored towards providing the conditions for ecological function to thrive in a way that engages students in the process. It must offer the means for individuals to reconcile their relation to the natural world and in doing so, the architectural process becomes a pedagogical tool in addition to being a tool of ecological inquiry. A growing recognition of anthropogenic stressors has spurred a global movement towards new ontologies, but has yet to manifest itself in early childhood education.³² While the urgency of the dire situation certainly suggests that the focal point of efforts need to target immediate responses, foresight must also be given to the environments offered to the next generation of ambassadors – many of whom are further disjointed from strong ecologies than previous generations. Is there a way to reframe current ecological discourse through the lens of early childhood education so as to both address the need for immediate action and sustained change? Perhaps the anthropogenic narrative being presented needs a new vernacular – one that instills hope and optimism rather than fear and dread. The Anthropocene has been presented as a suitable classification of the geological era defined entirely by humankind’s exploitive endeavours, and yet multiple critiques exist on the subject. These critiques call into particular question the role white voices have played not only in defining the era but also in creating the conditions for its fruition too, as well as the seemingly definitive stance it takes on the era being defined only by destructive acts.³³ As the terms anthropogenic or anthropocentric begin to permeate ecological discourse, the very language used must be called in to question. The word itself places unequivocal emphasis on humankind as a central figure in this dialogue, further isolating our species from the rest of life, thus further exacerbating the egotistical status that has led to such an unprecedented ecological transformation. Instead what is needed is a resurgence of alternative worldviews and so part of folding in ecological

02 discourse is embedded in the application of contemporary critiques, but it is also to be found in the carving of space dedicated to ancient wisdom too.

While ecological discourse has only come in to fruition as an academic subject in recent decades, its founding concepts have been prevalent for millennia. Holistic and spiritual relations between humankind and the earth, with all of its intrinsic processes, are fundamental in many Indigenous ways of being.³⁴ An abundance of ecological knowledge still exists here despite the horrific history of genocide, assimilation and oppression. Fortunately, the Toronto Outdoor Education Schools are committed to upholding the Truth and Reconciliation Commission of Canada's 94 Calls to Action – particularly with regards to “sharing our fuller history and knowledge”.³⁵ Furthermore, these centres continue to value the immense wisdom that comes from alternative worldviews – particularly of Canada's First Nations, Métis and Inuit.³⁶ A collaboration between the Toronto Outdoor Education Schools and Toronto's Urban Indigenous Education Centre is already in place, and so in addition to running regenerative design through pedagogical and ecological lenses, running it through an ontological lens could also foster a more empathetic architectural approach. What is most remiss from the current paradigm is a relation to the spiritual realm – an opportunity to evoke meaning and value from biotic and abiotic beings beyond their physical existence.³⁷ How can design begin to engage other facets of life that so often get relegated to the side in an educational system so entrenched in demanding quantifiable and tactile milestones? The answer lies in exploring alternative ontologies, and giving voice to ones that recognize that learning is about much more than facts and figures. The Seven Grandfather Teachings in particular offer an alternative view of what an education should elicit: love, respect, bravery, truth, honesty, humility and wisdom.³⁸ Offering students alternative understandings of how they can orient themselves in ontological space is critical in fostering sustained regeneration. They must know that the ways in which they conduct themselves in the world has the capacity to influence entire ecologies.

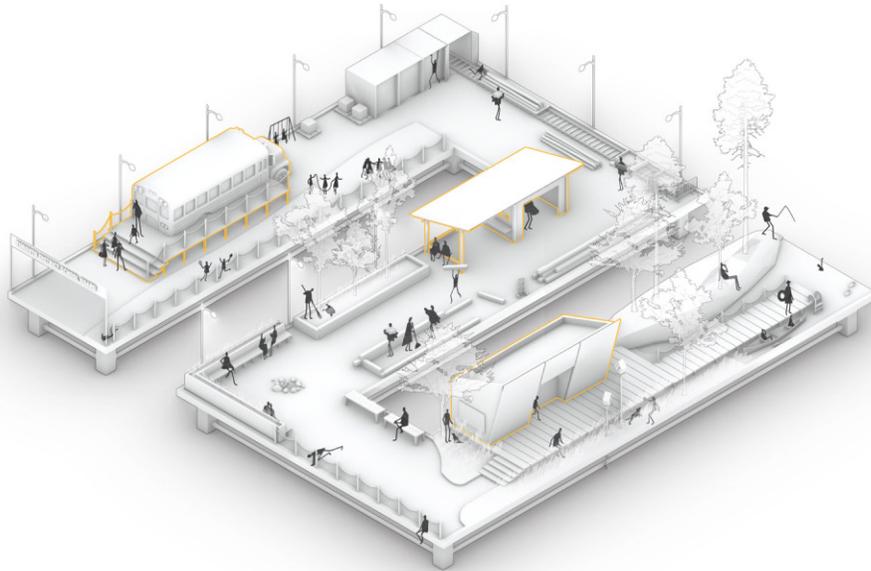
Engaging interdisciplinary discourse is a means of establishing a robust and refined architectural approach towards regeneration that is pertinent to reestablishing ecological values in the Toronto District School Board. It defines the extents of what regeneration can influence, from pedagogical reform to ecological reimagination to ontological reorientations. Each of these discourses begin to lay out the ambitions the movement can take at varied scales.

THE REAL DESIGN IS A METADESIGN

“In an era of Massive Change, the idea of a definitive and permanent design solution is increasingly unrealistic. When the world around us is constantly changing, we need a design strategy that is built to take advantage of new possibilities without throwing away the equity that we have already placed in the design process. ‘Designing the platform for constant design’ fundamentally changes the terms of the design charter from the singular to the sequential, from the object to the ecosystem. The real design project is not the definitive object you are producing, or the first iteration of the solution – no matter how brilliant. There is always room for improvement. The real design is the metadesign of a platform for continuous design development. This is design for constant design. This is design for Massive Change.”³⁹

Given the unprecedented changes that centres of ecological education will face in the coming years, be them positive or negative in nature, the idea of a static and permanent design solution is entirely problematic. This approach does not leave room for adaptability, for growth, or for alternative paradigms. What is needed is a systems approach that sets up the conditions for future-proofing and will engage multiple scales of design all the while placing life at the center. This approach, or the metadesign, is capable of permeating pedagogical, ecological and ontological inquiry by laying the groundwork for design at multiple scales and programs (fig.13). Firstly, the framework could initiate a series of program designs that are grounded in emerging pedagogical trends, reimagining how ecological education is taught. Secondly, the proposed metadesign could instigate iterative or phased building designs, effectively reimagining the spatial qualities of these spaces. And lastly, this proposed approach could compassionately engage ontological discourse by setting the conditions for an urban design initiative that seeks to transform the prominent ways of being in urban settings. The architect’s role, and indeed the task of this thesis, is not to propose one speculative solution but instead to reimagine what contributions can be made to sustain positive temporal evolutions in each of these disciplines.

In its ambitions to rework the pedagogical methodology – the metadesign should primarily seek to compliment existing initiatives within the Toronto Outdoor Education School program to de-stratify ecological education.



13 | The Metadesign of a Regenerative Urban Ecology Hub

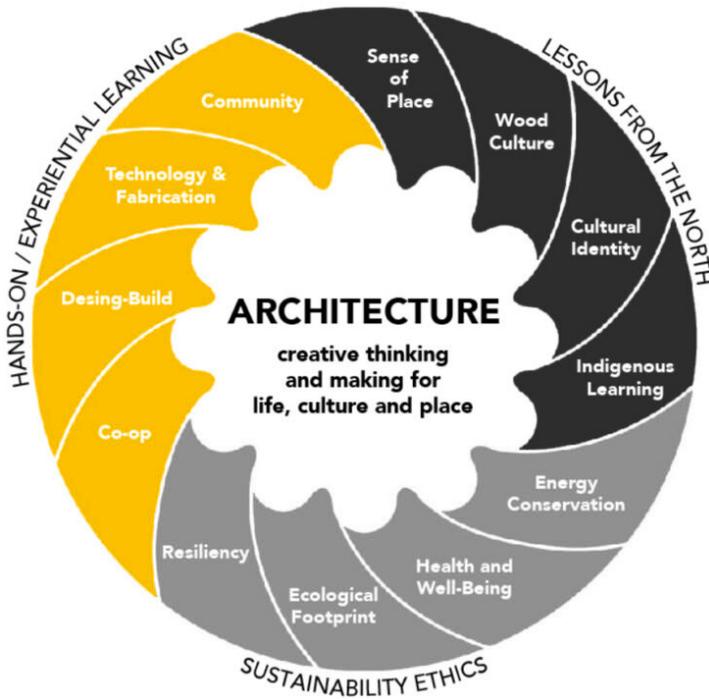
This isometric drawing was produced using a number of readily available software as a preliminary depiction of the framework that would become the Regenerative Urban Ecology Hub. It reflects the need for program design, building design and urban design to operate simultaneously.

Educators have already identified a need to establish alternative means of disseminating these core values, and work is underway to do so. Part of the program's pandemic response was to initiate a mobile program database that could be delivered at schools rather than at host centres.⁴⁰ Educators would commute to the city's centres in the morning to pick up program resources, then would travel to a designated school to offer an outdoor program to a class. Not only did this strategy present a proactive response to the mandates put in place, but it also offered a vision for how these indispensable learning opportunities could be disseminated in a new manner. Of course some of the ephemeral or spiritual components of being immersed in nature were lost, but the new methodology proved that these lessons could be made much more readily available. Capitalizing on this newfound synergy, the Toronto Outdoor Education School's educators and specialists made an active effort to begin guiding classroom teachers how in delivering these programs, themselves – a metadesign in and of itself. In this way, efforts to de-stratify ecological education came directly from those most marginalized, and as a result of that intimacy with the complex issues, has been met with immense success. Architecture has two potential roles to play here. The first is that its designs could be tailored to accommodate a new range of programs beyond the conventional curriculum expectations. The second, and perhaps more proactive contribution, is to actively contribute to a pedagogical design. What are the ways in which the architectural design process itself could contribute to the dissemination of ecological knowledge? Given the engaging

and enlightening nature of creation, it seems a pertinent vessel that could support existing initiatives. Along these lines, the metadesign offers a chance to simultaneously address the urgent need to reimagine how these teachings are disseminating as well as the long term vision of empowering the students to take on the coming challenges.

Through an ecological lens, the proposed metadesign could establish a framework to reimagine underappreciated spaces across the city of Toronto as hubs of innovation, creativity and inspiration. It seems that with the trend towards localizing and de-stratifying ecological education, Toronto’s 583 existing schools and respective yards are remarkably well poised to take on this role.⁴¹ Architecture then has a distinct role in establishing a new, life-centered typology that should not simply be recreated endlessly, but adapted meaningfully to each project in response to the unique contextual forces and productive tensions at play. This framework has already been proven to carry immense value by the McEwen School of Architecture – the first new school of architecture in Canada in over 45 years – with their privileging of experiential learning, Indigenous learning, and ecological learning (fig.14).⁴² By defining a systems approach to the inspired redesign of existing schools, the metadesign here offers a chance to allow others to pick up the pieces and initiate their own adaptive-reuse projects. Change here becomes action. This echoes the values of sharing and reciprocity exhibited by the educators in that it does not hold the professions skills and knowledge close to the chest, but out in the open in the hopes of contributing to a better world. The metadesign of a new building typology also has the rare opportunity to establish a new normal. No longer should the existing remarkable spaces of ecological education be considered extraordinary or beyond the expected. The care exhibited in existing spaces of this typology towards touching the land lightly, material language, framing natural views, preserving interspecies assemblages and acting as a producer in the local ecosystem should be expected of all buildings. This is an opportunity to address the current urgent condition by establishing a new architectural typology conducive to disseminating these teachings more accessibly alongside a more aspirational long-term vision of elevating the status of buildings which view themselves as living organisms, actively contributing literal and metaphorical nutrients to the systems they occupy.

In addition to the program and building designs whose conditions can be set up through this interdisciplinary framework, the project can also elicit an ambitious urban rewilding whereby the compartmentalized spaces



14 | MSoA Life Diagram
 The McEwen School of Architecture's innovative pedagogical approach positions design as a link between Indigenous Learning, experiential learning and ecological learning to great avail.

of ecological function can be further de-stratified. Thus a shift towards a more holistic ontological orientation for a broader population can occur. User-generated urban acupuncture can respond to the unique contexts of each site while also resisting the capital-intensive top-down developments that have previously governed schoolyard projects.⁴³ Further, it presents an opportunity to engage students with the creation of ecologically productive environments close to home. The memories, emotions, values and ideas these experiences offer begin to cultivate a nature culture, wherein students develop a profound and intimate sense of place that is rooted at the intersection of social and environmental space. The project should articulate an approach to rewilding the city that embraces the uninhibited creativity and imagination of children. By positioning children as actors on, rather than recipients of, natural environments, it may be possible to shift the prevailing ontological orientation of humans in urban settings to be more ecologically minded. The active rewilding of the Toronto District School Board's available yards could address the immediate need to expand and improve urban natural systems while also setting a backdrop for more immersive and intimate learning opportunities in the future.

The pedagogical, ecological and ontological ambitions of regenerative design will not be manifested in one intervention; the challenges are too entrenched and the scope too broad for a single-iteration approach to warrant

discussion. Instead, it has to be considered that architecture’s role in fostering ecological values in Toronto’s urban setting is in the creation of a metadesign whose philosophies can be adapted and iterated a thousand times over. The proposed approach must recognize its capacity to touch on program design, building design and urban design equally – all with the underlying stipulation of engaging the next generation of ecological ambassadors in the process. Children are an uninhibited and innumerable source of creativity, inspiration, energy and passion. Their voices warrant inclusion not because they will inherit the ecological challenges left to them in the future, but because their inspiring spontaneity, curiosity and creativity might be exactly what is so desperately needed in order to combat these challenges today.

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- 24 Bruce Mau, “The Real Design is a Metadesign – A Platform for Continuous Improvement,” in *MC24: Bruce Mau’s 24 Principles for Designing Massive Change in your Life and Work*, (New York: Phaidon Press, 2020), 37.
- 25 Bruce Mau, “Think Long Term, and Put Life at the Center,” in *MC24: Bruce Mau’s 24 Principles for Designing Massive Change in your Life and Work*, (New York: Phaidon Press, 2020), 181.
- 26 Hannah Arendt, “The Crisis in Education,” in *Between Past and Future*, (New York: The Viking Press, 1961), 173-196.
- 27 Ontario Ministry of Education, “Community-Connected Experiential Learning: A Policy Framework for Ontario Schools, Kindergarten to Grade 12,” in *Ministry of Education: Draft for Consultation*, (Toronto: Queen’s Printer for Ontario, 2016).
- 28 “Program Offerings,” Forest Valley Outdoor Education Centre, Toronto District School Board, <https://schoolweb.tdsb.on.ca/forestvalley/Program-Offerings>; “Programs,” Hillside Outdoor Education School, Toronto District School Board, <https://schoolweb.tdsb.on.ca/forestvalley/Program-Offerings>; “Programs: Overview,” Toronto Urban Studies Centre, Toronto District School Board, <https://schoolweb.tdsb.on.ca/tusc/Special-Programs>; “Programs,” Warren Park Outdoor Education Centre, Toronto District School Board, <https://schoolweb.tdsb.on.ca/warrenparkoutdoor/Programs>; “Programs,” Etobicoke Outdoor Education Centre, Toronto District School Board, <https://schoolweb.tdsb.on.ca/eoec/For-Teachers/Programs>; “Programs,” Island Natural Science School, Toronto District School Board, <https://schoolweb.tdsb.on.ca/islandoutdoor/Programs>; “Programs,” Mono Cliffs Outdoor Education Centre, Toronto District School Board, <https://schoolweb.tdsb.on.ca/mono-cliffs/Programs>; “Our Programs for A to Z,” Scarborough Outdoor Education School, Toronto District School Board, <https://schoolweb.tdsb.on.ca/soes/Programs/A-to-Z>; “Programs,” Sheldon Centre for Outdoor Education, Toronto District School Board, <https://schoolweb.tdsb.on.ca/sheldon/Programs>

During the process of defining a pedagogical framework based on the existing programs offered, a compiled database was created which offered the ability to search all Toronto Outdoor Education School programs in one place by centre, subject, mobile/remote adaptability and grade. This document is currently in the final stages of development and is intended to be made publicly available.

- 29 Ontario Ministry of Education, "Community-Connected Experiential Learning: A Policy Framework for Ontario Schools, Kindergarten to Grade 12," in *Ministry of Education: Draft for Consultation*, (Toronto: Queen's Printer for Ontario, 2016).
- 30 Brian Wattchow and Mike Brown, "The Emergence of Place in Outdoor Education," in *A Pedagogy of Place: Outdoor Education for a Changing World*, (Victoria: Monash University Publishing, 2011), 77-105.
- 31 Christian Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture*, (New York: Rizzoli, 1979).
- 32 IPCC, "Human Influence on the Climate System," in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge: Cambridge University Press, 2021.
- 33 Donna Haraway, "Making Kin: Anthropocene, Capitalocene, Plantationocene, Chthulucene," in *Staying with the Trouble: Making Kin in the Chthulucene*, (London: Duke University Press, 2016), 99-104.
- 34 Art Petahtegoose, "Atikameksheng Anishnawbek Ecological Knowledge and Pedagogy," interview by Tristan O'Gorman, March 28, 2022.
- 35 Veronica Uzielli, email to author, March 9, 2022.
- 36 *ibid.*
- 37 Art Petahtegoose, "Atikameksheng Anishnawbek Ecological Knowledge and Pedagogy," interview by Tristan O'Gorman, March 28, 2022.
- 38 *ibid.*
- 39 Bruce Mau, "The Real Design is a Metadesign – A Platform for Continuous Improvement," in *MC24: Bruce Mau's 24 Principles for Designing Massive Change in your Life and Work*, (New York: Phaidon Press, 2020), 375.
- 40 Veronica Uzielli, "Toronto Outdoor Education Schools and Related Topics," interview by Tristan O'Gorman, October 13, 2021.
- 41 "About Us," Toronto District School Board, <https://www.tdsb.on.ca/About-Us>.
- 42 "MSoA Life Diagram," Architectural Studies (BAS), McEwen School of Architecture, accessed May 2, 2022. <https://mcewenarchitecture.ca/programs/architectural-studies-b-a-s/#curriculum>
- 43 Veronica Uzielli, email to author, April 9, 2022.

15 | The Allegory of the Bulrush

The fourth in a series of digital sketches, this drawing depicts two individuals playing freely with an invasive but ever-present species in an attempt to reiterate this thesis' stance that there are ways in which we can establish new relations with the seemingly 'unattractive' spaces that already exist in our shared built landscapes.

T. O'Gorman



CHAPTER 03

The Proposed Quasi-Architectural Impetus

Children are innate architects who operate with an inspired degree of spontaneity, imagination and creativity.⁴⁴ Their capacity for place-making is not driven by a pragmatic understanding of functionality or logistics but instead by an inherent desire to engage with the built and natural landscapes that surround them. Perhaps most importantly, however, is that to them the creation of places is not a task with anticipated objectives but is rather an act of play; it is the process of discovery and creation that holds value because it is here that they form an intimate understanding of the world around them and their role in cultivating it as a place worthy of inhabitation. What we are left with upon equipping children with the opportunity to create freely is not only a swath of uninhibited ideas of what our urban settings could look like but also a generation of empowered stewards with a shared ambition of situating themselves and humankind as a whole in the world meaningfully. Imagine now if this drive could be grounded in ecological values – not only would children be better equipped to face some of the greatest incoming challenges of our times, but society as a whole could begin to occupy successful cities.⁴⁵

“Most adults can remember what it was like to play as a child. For the majority, the most enjoyable times of play were not in the designated areas designed by adults, but instead through occupying the streets, the back garden and any other part of the environment that was accessible to them. It is during this period that children learn about the world around them, learn valuable social skills and perhaps most importantly, learn about themselves. This incidental play is paramount to a child’s development, and children inherently have an ability to find opportunities for this play anywhere.”⁴⁶

The proposed response to the atrophy of ecological inquiry is comprised of two synchronous endeavours that recognize students and children in general as agents of massive change even amidst dire conditions. Play, further, is a

simple but profound approach to fostering a strong relation to place and is often manifested architecturally in surprising ways. The quasi-architectural response proposed here, offers a means of addressing the precarious position of ecological education at the program, building, and urban scales all while engaging the playful and inspired minds of children. Given the value being placed on education as the realm in which perpetual positive change will happen, an interdisciplinary approach must be taken. A robust and empathetic framework for this approach can be drawn from a collaboration with outdoor education school site supervisors, Toronto District School Board principals and Atikameksheng Anishnawbek Elders. In doing so, the architectural theory and design applied here does not operate in isolation from existing initiatives, logistics or aspirations; instead it is supported by them to offer a grounded vision of a new normal. The proposed two-pronged quasi-architectural impetus positions regenerative architectural theory and design as a means of defining a robust framework for pedagogical reform first, and then is applied speculatively as an imagination of what an urban rewilding could look like in Toronto. The first prong, a Generative Urban Design Ideas Charette, focuses its efforts on addressing the immediate need to offer students an alternative point of entry to ecological inquiry. This portion of the proposal embodies the idea of a metadesign by setting up the conditions for any number of individuals to realize their own ecological initiatives. Subsequently, the second prong, the design of a single pilot Regenerative Urban Ecology Hub, will apply this framework to exhibit the long term-vision of what this approach may elicit. These two coincident pedagogical design interventions offer an alternative means of distilling agency and stewardship in the Toronto District School Board’s 247,000 students.

THE GENERATIVE URBAN DESIGN IDEAS CHARETTE

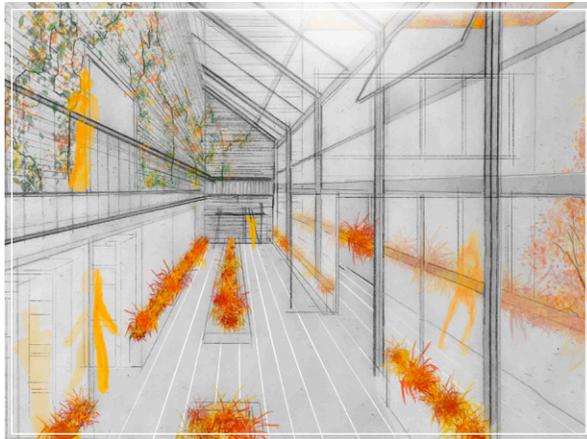
The proposed Generative Urban Design Ideas Charette aims to compliment the recent initiatives to de-stratify and reintegrate ecological education and place-making within the Toronto District School Board that is being led by its outdoor educators. Whereas their approach is tailored towards adapting their 300+ existing programs to be delivered either remotely or in schoolyards, this charette instead aims to bring ecological inquiry directly in to classrooms.⁴⁷ Where they meet, however, is in equipping educators with the tools to deliver their own lessons without needing to outsource expertise or resources. Given the precarious position their programs have been put in, outdoor educators

are currently working tirelessly to cultivate a ‘teaching to teach’ program so that classroom teachers are offered the same opportunities to offer these invaluable lessons, thus effectively reintegrating ecological education. In collaboration with the site supervisor of the Toronto District School Board’s most remote Outdoor Education School, the exhaustive list of currently offered programs has been distilled to five foundational pillars that outline the pedagogical framework being proposed here: play, discover, care, create, share. The framework maps out the process of experiential-learning students engage with that has proven to have such profound results in terms of fostering an appreciation of their relation to the natural world. The Generative Urban Design Ideas Charette is a physical and digital resource that folds ecological values and architectural design in to this methodology and asks students to imagine their own schools and yards as hubs of ecological thinking (fig.16).

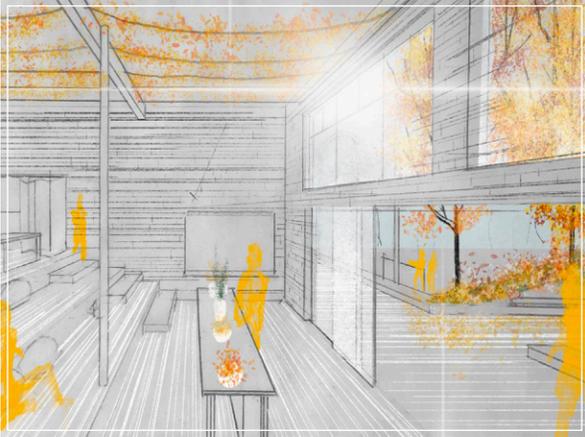
The Generative Urban Design Ideas Charette is presented as a pamphlet that has been made available to be distributed to schools either in print format or digitally, which outlines a design exercise for students that classroom educators can adapt to meet their own curriculum objectives. To achieve this the contents of the pamphlet are not intended to be prescriptive but instead complimentary. What is offered by the resource is: the overarching framework, a description of the exercise, a step-by-step process that outlines what is required to complete it, prompts pertaining to ecological thinking in urban settings, a catalogue of sustainable design strategies to be considered, FAQ’s and list of complimentary resources that teachers may draw from to fortify their lessons (fig.17a). The contents encourage students to be imaginative and exploratory in how they would transform their existing schools into their own Regenerative Urban Ecology Hubs, at whatever scale seems pertinent to the courses they are currently enrolled in. While the design of the charette was tailored mostly around its contents, part of it was also focused on the physical artifact that would be distributed to schools. The pamphlet has been designed with a moderately elaborate folding pattern which enables the contents to reveal themselves one component at a time. The process of unfolding the document heavily resembles that of flipping through the pages of a small book – a format particularly familiar to young students. In addition to revealing themselves in a logical sequence, the explanatory contents of the pamphlet have been arranged entirely on one side of the sheet. This front side contains all the directions while the back side is intentionally left blank so that students may populate the pamphlet with their own ideas (fig.17b). The artifact then becomes not only a vessel for the design exercise, but also for

16 | Atmospheric Views

- i. The new main entry to Oakwood, flanked by newly programmed spaces and living landscape features.
- ii. A new study space adjacent to the library diffuses the boundary between interior and exterior spaces.
- iii. A new classroom typology encourages learning to happen as much outside of the classroom as it does inside.
- iv. New exterior learning spaces offer opportunities to incorporate lessons previously exclusive to outdoor education schools.
- v. With a mandate to de-stratify zones of ecological function, this proposal also advocates for an ambitious urban rewilding beyond the extents of the yard.
- vi. A new interior courtyard has the potential to permit light and fresh air into the otherwise secluded interior spaces of the original school.
- vii. The courtyard also offers an opportunity activate corridors and breakout spaces and position them as hubs of scholastic activity that are organized around natural elements.
- viii. A new main entry reorients the school towards a revitalized schoolyard and several adjacent interventions.



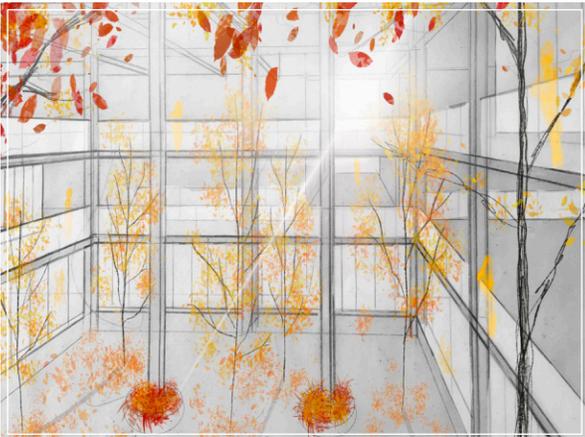
i. ii.



iii. iv.



v. vi..



vii. viii.

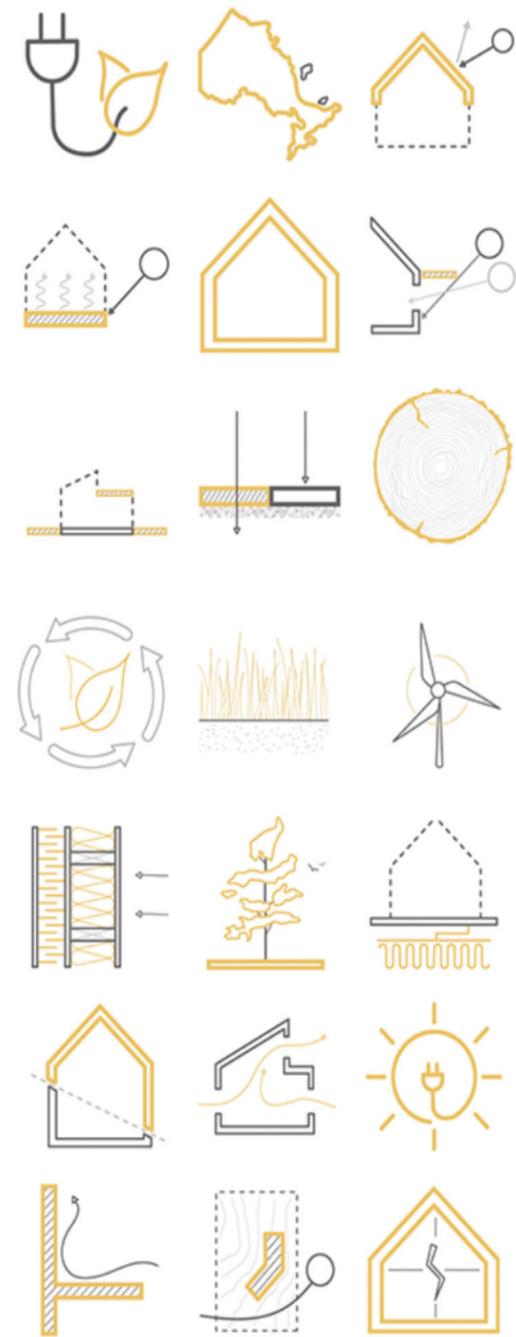
HELPFUL TOOLS

- 1 Living Community Challenge - PDF
<https://living-future.org/lbc/>
- 2 Massive Change - Site
<https://brucemaustudio.com/mc24/>
- 3 Toronto Preservation Board
<https://www.toronto.ca/city-government/planning-development/heritage-preservation/toronto-preservation-board/>
- 4 Toronto Outdoor Education Schools
<https://schoolweb.tdsb.on.ca/toes/>
- 5 TOES Program Database
https://docs.google.com/spreadsheets/d/1hX3k_qHmJSFp-
- 6 Interactive Map of Toronto
<https://academic.daniels.utoronto.ca/urbanism/map/>
- 7 TRC Calls to Action
https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/indigenous-people/aboriginal-peoples-documents/calls_to_action_english2.pdf
- 7 Sketchup Software Download Link
https://www.sketchup.com/plans-and-pricing?utm_source=google&utm_medium=paid_search&utm_campaign=Brand_Search_Brand_NORAM&gclid=CjwKCAjwur-SBhB6EiwA5sKtjsHjVfQrKePHQGJ5VyGyb6bEIK4LXMsOHMOVK5n-24VSyeco6gG16xoCI7IQAvD_BwE#for-professional

FAQs

- Q:** Is there a deadline I need to submit my charette submission by?
Absolutely not! You are encouraged to share your ideas with the Ministry of Education whenever you like, as often as you would like.
- Q:** Do I have need to be able to draw architectural drawings to participate?
No! Please feel free to show your ideas however you feel - all kinds of representation are equally valuable!
- Q:** Can I submit more than what I can fit on this sheet?
Please feel free to send any and all work you've produced to the Ministry of Education.
- Q:** Can I collaborate with my classmates?
Absolutely! You should always feel encouraged to discuss and work through your ideas with others.
- Q:** How are the winning submissions selected?
All submissions are considered equally valuable in cultivating ideas on how to rewild the TDSB's school yard. Perhaps yours will inspire a project at your own school.
- Q:** What happens with my submission after I send it in to the Ministry of Education?
Ontario's Ministry of Education is invited to read all mail that is delivered to them, so rest assured your submission will be read by those with the power to realize your visions. You are also invited to share all of your ideas by tagging #MyRegenerativeUrbanEcologyHub on any of our affiliated social medias.

DESIGN STRATEGIES



DESIGN BRIEF

PROMPTS

LIFE-CENTERED DESIGN

What other **living things** do we share our city with - and how can we help provide the same quality of life to them as we do ourselves?

ADAPTIVE REUSE

What are the best and worst parts about your school? Are there any opportunities for **wild new spaces**, inside or out, that can come from what already exists?

CLIMATE RESPONSE

How can your school respond to the growing climate crisis? Are there ways to produce **energy, habitats, food or safety**?

URBAN REWILDING

Can your school and its yard offer a chance for the community to **immerse themselves in nature**? Can it provide healthy habitats for other living things too?

PHASED TRANSFORMATION

How can your ideas come to life? What do they look like **one week** from now, one month, a year, **ten years**?

INSTRUCTIONS

WHAT

- 1 School Inform...
Please provide location, the g... submission an...
- 2 Text
Please provide... of what your v... could contribu... a Regenerative...
- 3 Key Panel
Present your r... you would like... sheet.
- 4 Drawings
Show your ide... by drawing sce... elevations, ma...
- 5 Submission Pa...
Using the prov... envelope, plea... to the Ministr... document can...

6 Consider Level

Program Design
Build



17a | The Generative Urban Design Ideas Charette (Front)
This proposed pamphlet is to be distributed to schools as a pedagogical device to reintegrate ecological education with education as a whole. It offers a framework for the 247,000 students of the TDSB to conceptualize and communicate their own ideas of how their schools could be reimagined as hubs of ecological thinking. Ultimately, its sets up the conditions to facilitate a tsunami of calls to action.

WHAT TO DO

Information
Provide a school name, its location, and group size behind this competition and its group members.

Instructions
Provide a brief description of the design vision is, and how it relates to the creation of the Urban Ecology Hub.

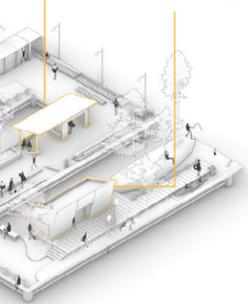
Submission
Submit as graphically, either as a poster, plans, sections, elevations, maps, diagrams, etc.

Display
The main ideas, however they are displayed, on the back of this competition.

Prize Package
A prize package provided pre-paid return shipping. Please submit your ideas to the Ministry of Education. This competition will serve as the address.

Levels of Design

Building Design
Urban Design



DESCRIPTION

[Placeholder Text - to be modified by classroom teacher in accordance to their own curriculum objectives] In setting up an ideas charette for youth as a first step, the project has the capacity to immediately generate awareness among students of the overarching issue through a pedagogical tool while also highlighting their agency and the valuable role they play in defining our cities' landscapes. The competition de-stratifies and reintegrates ecological education with education as a whole by establishing and capitalizing on connections to core curriculum objectives across grades. In doing so, ecological education is no longer positioned as a topic that only gets engaged at isolated and peripheral moments, but is instead positioned as a valorized and central foundation upon which all other education can take place. And yet, while the metadesign of an ideas competition can inform how spaces of ecological education are conceived and created, this thesis project also offers an opportunity to explore and reestablish architecture's role as an actor in education through design as well.

INSPIRATION



THE DESIGN PHILOSOPHY

Ontario Ministry of Education
Mowat Block, 900 Bay St.
Toronto, ON
M7A 1L2

MY REGENERATIVE URBAN ECOLOGY HUB

TDSB DESIGN CHARETTE

THE OAKWOOD ECOLOGY HUB

BY TRISTAN O'GORMAN

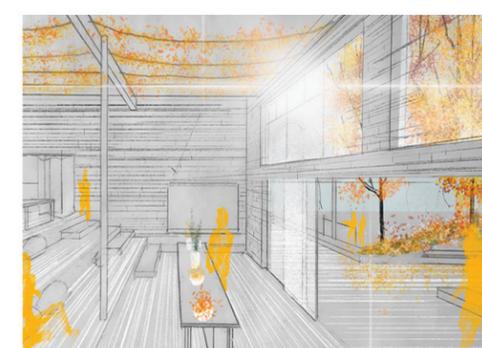
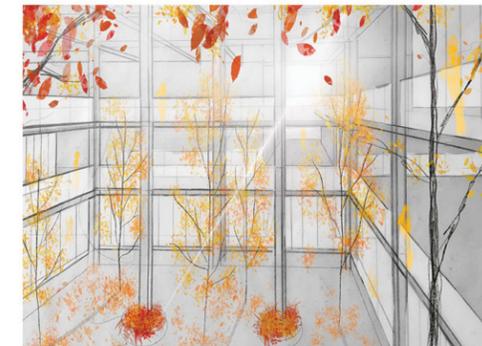
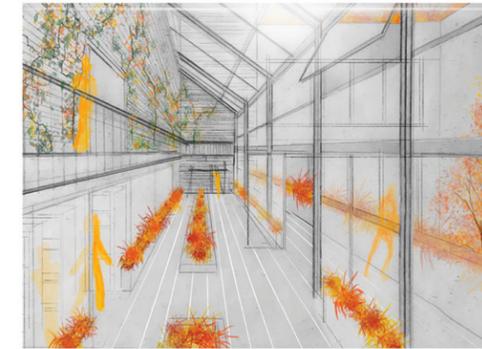
School: Oakwood Collegiate Institute
 Location: 991 St. Clair Avenue West
 Nearby Natural Areas: Earls court Park

Group Size: 1
 Grade: 12

Class Focus: Healthy Living
 Team Members: Tristan O'Gorman



DESIGN VIGNETTES

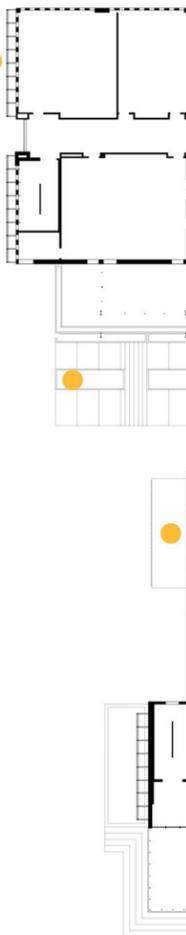


OAKWOOD

AIR

CAN A BUILDING BREATHE
 CIRCULATING IT AND FILTERING
 FOR THE HEALTH AND COMFORT
 OF OCCUPANTS?

CAN THE
 PROCUR
 ROUND
 HEAL



17b | The Generative Urban Design Ideas Charette (Back)
 This proposed pamphlet is to be distributed to schools as a pedagogical device to reintegrate ecological education with education as a whole. It offers a framework for the 247,000 students of the TDSB to conceptualize and communicate their own ideas of how their schools could be reimagined as hubs of ecological thinking. Ultimately, it sets up the conditions to facilitate a tsunami of calls to action.

ECOLOGY HUB KEY PLAN

LIGHT

BRING IN
COMFORT

CAN THE BUILDING PRODUCE ENERGY AND NUTRIENTS FROM NATURAL LIGHT? CAN LIGHT BE ALLOWED IN TO THE SPACE?

WATER

CAN THE BUILDING RECLAIM WASTEWATER OR GRAYWATER FOR OTHER PURPOSES THEN FILTER IT BEFORE RELEASE?

FOOD

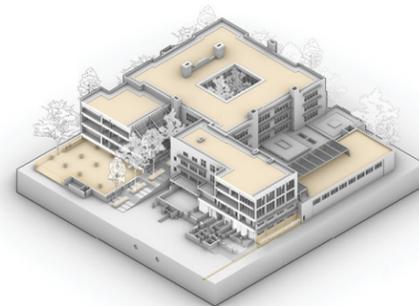
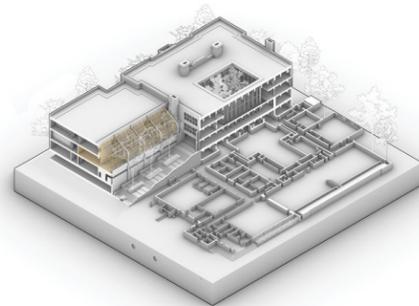
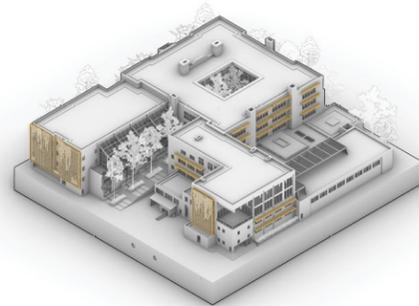
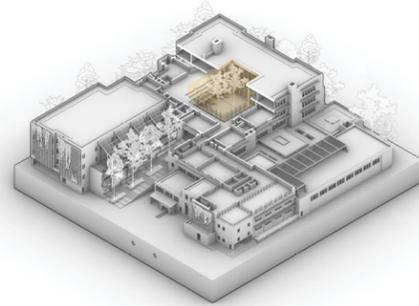
CAN THE BUILDING INTERNALLY PRODUCE ENOUGH FOOD, YEAR-ROUND, TO FEED ITS INHABITANTS? CAN IT GROW LOCAL AND SEASONAL FOOD?

WASTE

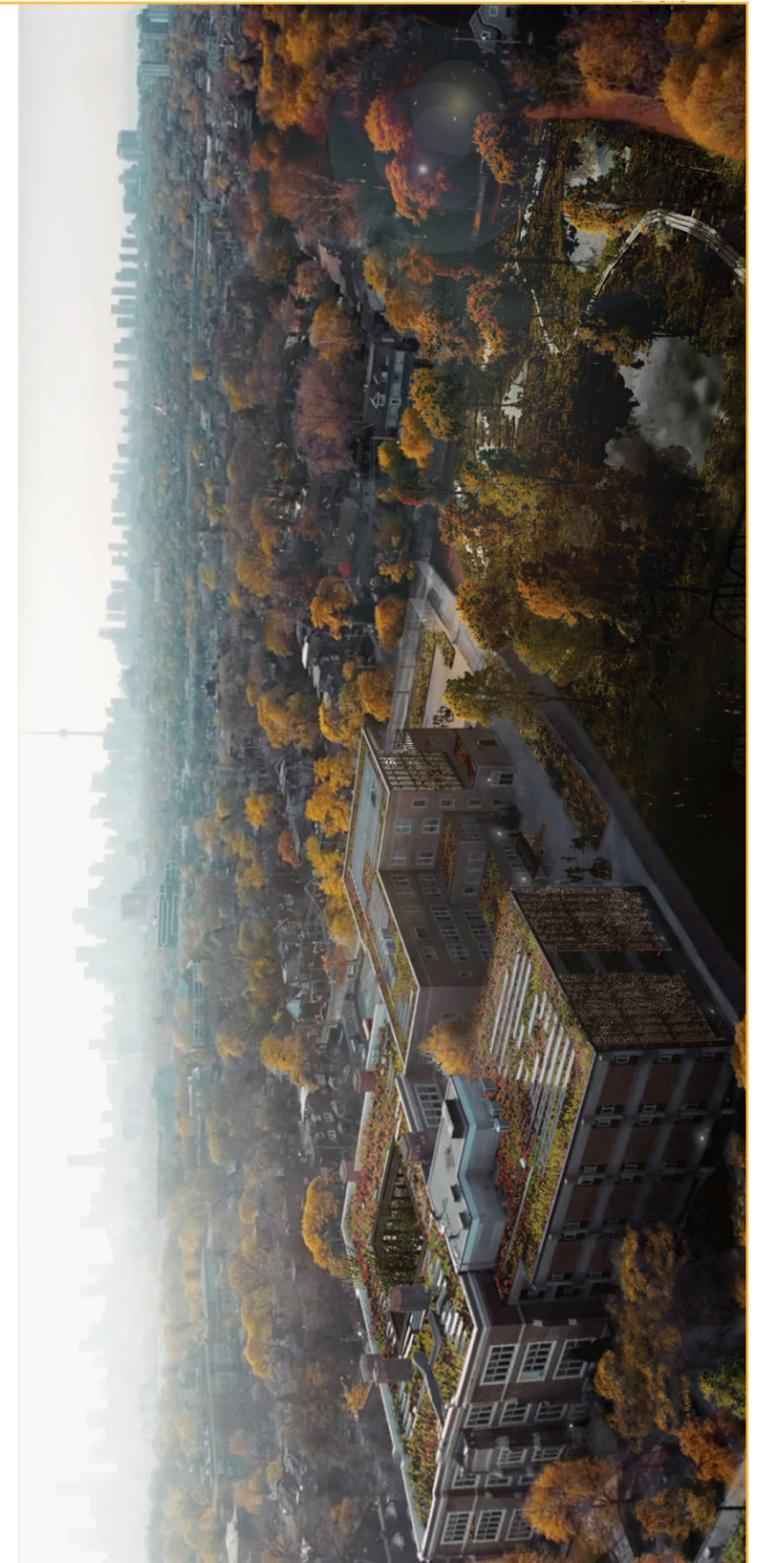
CAN THE BUILDING REPURPOSE OR OTHERWISE MITIGATE ITS WASTE PRODUCTION? IF SO, WHAT OTHER FUNCTIONS EXIST?



DESIGN ISOS



DESIGN RENDERS



the inspired creations it inspires. Each of these proposals then becomes a call to action in reworking the urban fabric of Toronto.

03

In conjunction with the five aforementioned pedagogical foundations the proposed Generative Urban Design Ideas Charette is structured around, the pamphlet also is grounded in five key design prompts that pertain to urban regeneration: life-centered design, adaptive re-use, climate response, urban rewilding and phased transformations. The pamphlet prompts students to consider each of these core ideas in their otherwise varied designs through a series of questions that are grounded in emerging discourses. Firstly, the topic of life-centered design asks what other terrestrial, aquatic or avian species could benefit from anthropogenic interventions. Is there an opportunity for cross-species assemblages that are mutually affirming?⁴⁸ Secondly, the topic of adaptive re-use reminds students that the most sustainable building is the one that already exists. Here the students are asked to consider the parts of their schools they consider to be conducive to a particular kind of education, and which are not. How do we reconcile our existing ontological orientations in physical space to be more ecologically minded?⁴⁹ Thirdly, the topic of climate response encourages students to consider the dire climatic conditions that are particularly pervasive in cities. How, amidst unprecedented change, can we establish a platform for continuous change?⁵⁰ Fourthly, the topic of Urban Rewilding asks students to imagine a city that can be compartmentalized as spaces that are “green” and those that are not, but instead as a continuous tapestry of uniquely mnemonic landscapes that share ecological functions. How do we revive the potential for land to act as a pedagogical device wherein experiential learning is happening in all places and at all times?⁵¹ Lastly, the topic of Phased Transformations asks students to consider what it takes to realize all of their inspired ideas – not in terms of logistical processes but as social and environmental calls to action. What does it take to bring user-generated urbanism to life when collaboration, iterative exploration and knowledge sharing are so dramatically restricted?⁵² From this interdisciplinary basis students and teachers are encouraged to take the exercise in any direction they desire and run with them in the most bold and aspirational ways they would like.

Much like the value of architectural design in this thesis project can not be manifested in one static creation, the value of these student contributions is not solely in the final interventions they come up with but also in the process of creation that they engage in and the resultant sense of place that is fostered. A kindergartener’s unrepressed idea of their school floating in

a sea of clouds is as valuable as a twelfth-grader’s orderly proposal for a hydroponics operation in an abandoned classroom because both inspire a new way of thinking about how pedagogy is conducted. Both offer a vision of how we can improve the ecological condition of our built landscapes. Both offer a new ontological orientation in which we can all engage more intimately with the natural environment we are so reliant upon.

This is not to say, however, that there is no value in realizing the proposals brought to life by the Generative Urban Design Ideas Charette – quite the contrary. What if these proposals could inspire a wave of user-generated urban acupuncture? What if the pamphlet itself could be complimented with subsequent resources such as a set of design guidelines, kit-of-parts or even mobile workshops that enabled these schools to realize many of the projects being proposed without navigating the arduous processes that currently governs schoolyard modifications.⁵³ What if, when construction is not possible, these proposals could be mailed directly to Ontario’s Ministry of Education as calls to action – highlighting the need to rethink the archetypal school design and demanding a new type of governance that is capable of fostering a new ecologically grounded pedagogical modus operandi? Imagine if each and every one of the Toronto District School Board’s 247,000 students actively contributed to the creation of Regenerative Urban Ecology Hubs at each of their 583 schools even in the least hospitable of sites. Would that not pave a clear path towards perpetual improvement?⁵⁴

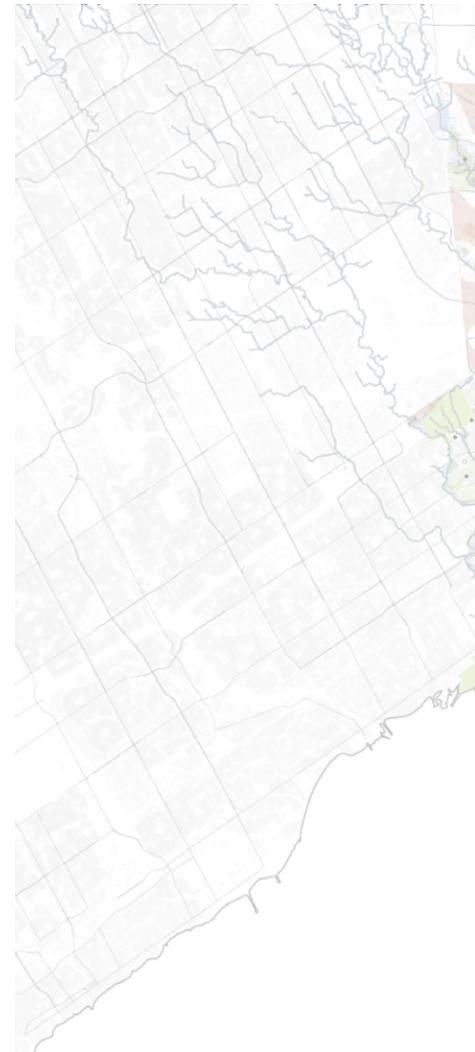
THE REGENERATIVE URBAN ECOLOGY HUB

The second portion of the design response to the atrophy of ecological inquiry in Toronto is the speculative creation of a pilot Regenerative Urban Ecology Hub that could be born out of the charette’s design prompts. The design application of the values and ideas presented by the charette offers an opportunity to highlight the potential for an ambitious pedagogical reform and urban rewilding that is so urgently required in the city. This particular interpretation has identified the need to imagine the entire building as a living organism that has come bursting into life even in the most barren pocket in the city.

The identification of an ideal host school was based primarily on the mapping of urban metrics that highlighted the disconnect between the waning number of spaces with any ecological function and Toronto’s steadily growing population. This iterative mapping exercise offered a graphic means

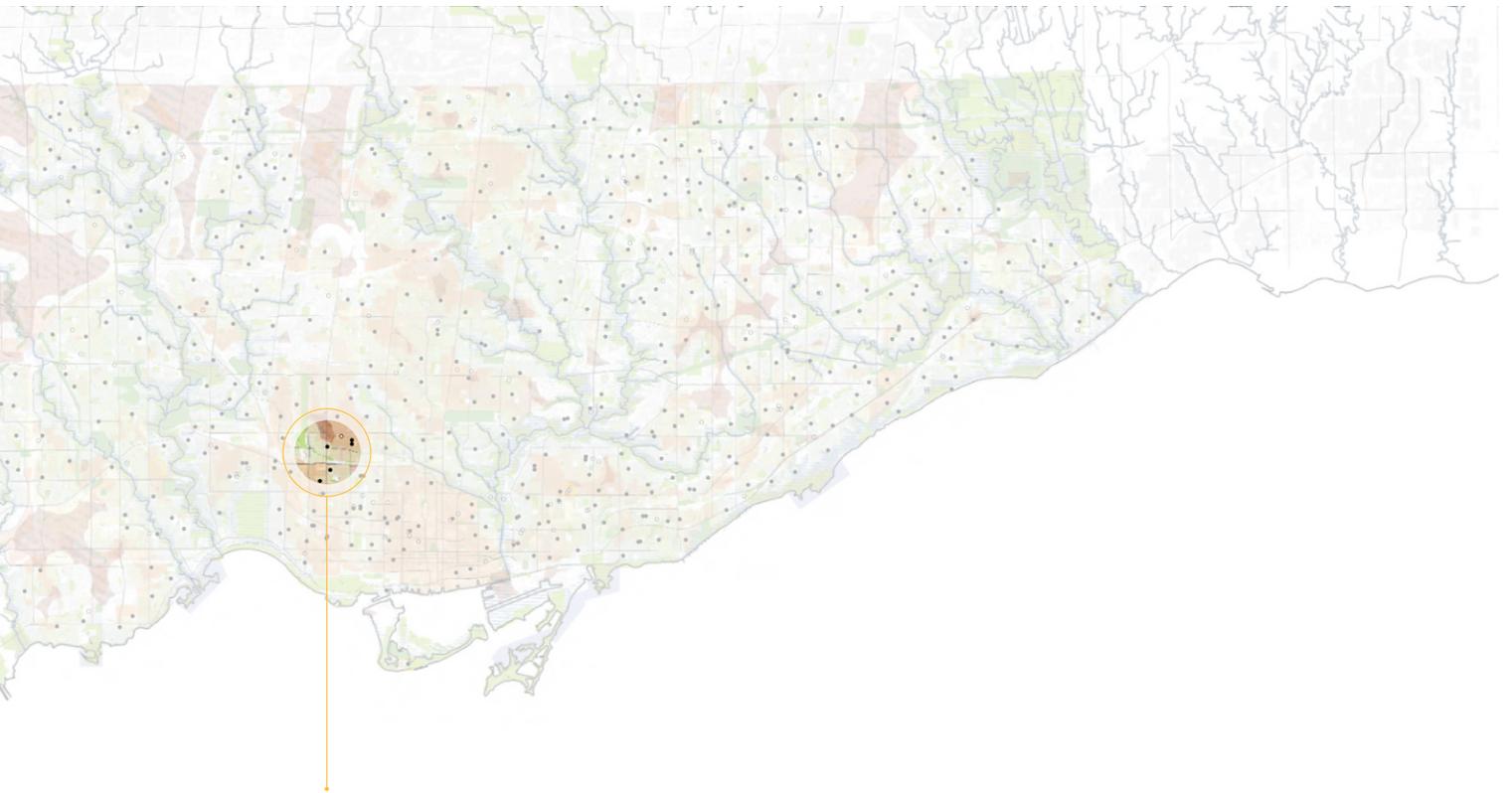
of situating the proposed architectural response by layering information that has been made available by other scholars pertaining to air, light, water, food, and waste in the city – metrics all nearly all living organisms share a relation with – into one image.⁵⁵ From here, nodes of positive and negative correlation can be identified wherein each of those metrics exists either in abundance or in scarcity. A number of primary and secondary schools exist in each of these nodes, but a more intimate understanding of their urbanities was needed to further refine the final selection. To compliment the quantitative findings from the critical mapping exercise, a number of site-visits was conducted at each prospective school to develop an appreciation for the qualitative natures of each site. These visits privileged experiential learning as a means of underpinning theoretical knowledge. At each site, participant observation led to a stronger understanding of any remarkable ecological features, moments of unique inhabitation and possible opportunities for architectural interventions. Ultimately, Oakwood Collegiate Institute was identified as an ideal host for a pilot project given the harsh urbanity and lack of ecological function that existed in the encompassing node of negative correlation (fig.18).

Located at St. Clair W. and Dufferin St., Oakwood Collegiate Institute exists in one of the most barren pockets of the city (fig.20). Here, the air quality is poor and often experienced only as uncomfortable gusts, light reaches only paved surfaces with none of its immense power being harnessed in any meaningful way, water is actively drained from the site and left in a contaminated state before being buried under a concrete earth, food is only seen as consumer product whose origins are unknown, and human waste is diverted from the site so quickly there is not a moment's consideration of the valuable role it actually plays in natural systems. Oakwood Collegiate Institute, rooted in this barren context, is in many ways an archetypal school of the Toronto District School Board itself. Built in 1907, the building is of Gothic Collegiate style and is made up of three above-grade stories that support a host of normative courses and two floors below grade that house a number of complimentary teaching and service spaces.⁵⁶ The school currently boasts an extensive list of 58 school renewal projects that have been delayed until further notice – ten of which are classified as urgent priority projects for systems in critical condition, and only four of which are classified as less than a high priority.⁵⁷ To cap the nearly impossible contextual and architectural conditions of the school is an relatively low operating budget of \$93,427, which does not cover facility or schoolyard repairs.⁵⁸ On top of it all, given the Toronto District School Board's urbanity, Oakwood Collegiate Institute does not qualify for



18 | Node of Negative Correlation

This composite image highlights a node wherein quality exposure to air, light, water, food and waste are not available to students in primary and secondary schools within the Toronto District School Board.



NEGATIVE CORRELATION

St. Clair Ave. W. & Dufferin St.



Educational Development Charges which are government funds that finance school boards across the province of Ontario looking to purchase new land for future schools.⁵⁹ Not only is Oakwood Collegiate Institute only being offered minimal support to keep up with the increasing demands put on the facility, but it also can not even expect provincial support in alleviating those pressures to begin with.

Despite the impossible condition it faces, however, the members of Oakwood Collegiate Institute’s community are rallying together to capitalize on any latent opportunities it can seize to revitalize their school – much like the members of the Outdoor Education program are rallying to preserve its valuable lessons.⁶⁰ This shared narrative of optimistic renewal is what makes the school such a strong candidate. The school’s teachers are introducing novel courses that promote healthy living, the exploration of our world and alternative expressions or ways of life; students partake in design-build projects that are grounded in preserving and celebrating local resources –

19 | Adaptive Reuse
(Next, Left)

Oakwood Collegiate Institute has the potential to become the Oakwood Ecology Hub through an adaptive reuse strategy that privileges ten life-centered design interventions that are inspired by the proposed charette.

20 | Breaking the Urban Grid
(Next, Right)

Oakwood Collegiate Institute occupies a dense urban context, and is the only notable space that diffuses the urban grid and fabric.

03 natural or artificial; community partnerships have been formed to raise funds for small-scale initiatives; and perhaps most importantly, its principal is adamantly advocating for schoolyard renewals and is lending her resources, time, knowledge and energy to achieve them.⁶¹ It is with the contributions of Oakwood Collegiate Institute's current principal that the conceptualization of the Oakwood Ecology Hub has been made possible. Not only was the school made accessible for visits during the design stages of this thesis project, but her pragmatic knowledge of the school's existing condition and her access to existing building plans offered a strong basis in which a more imaginative architectural response could take root.

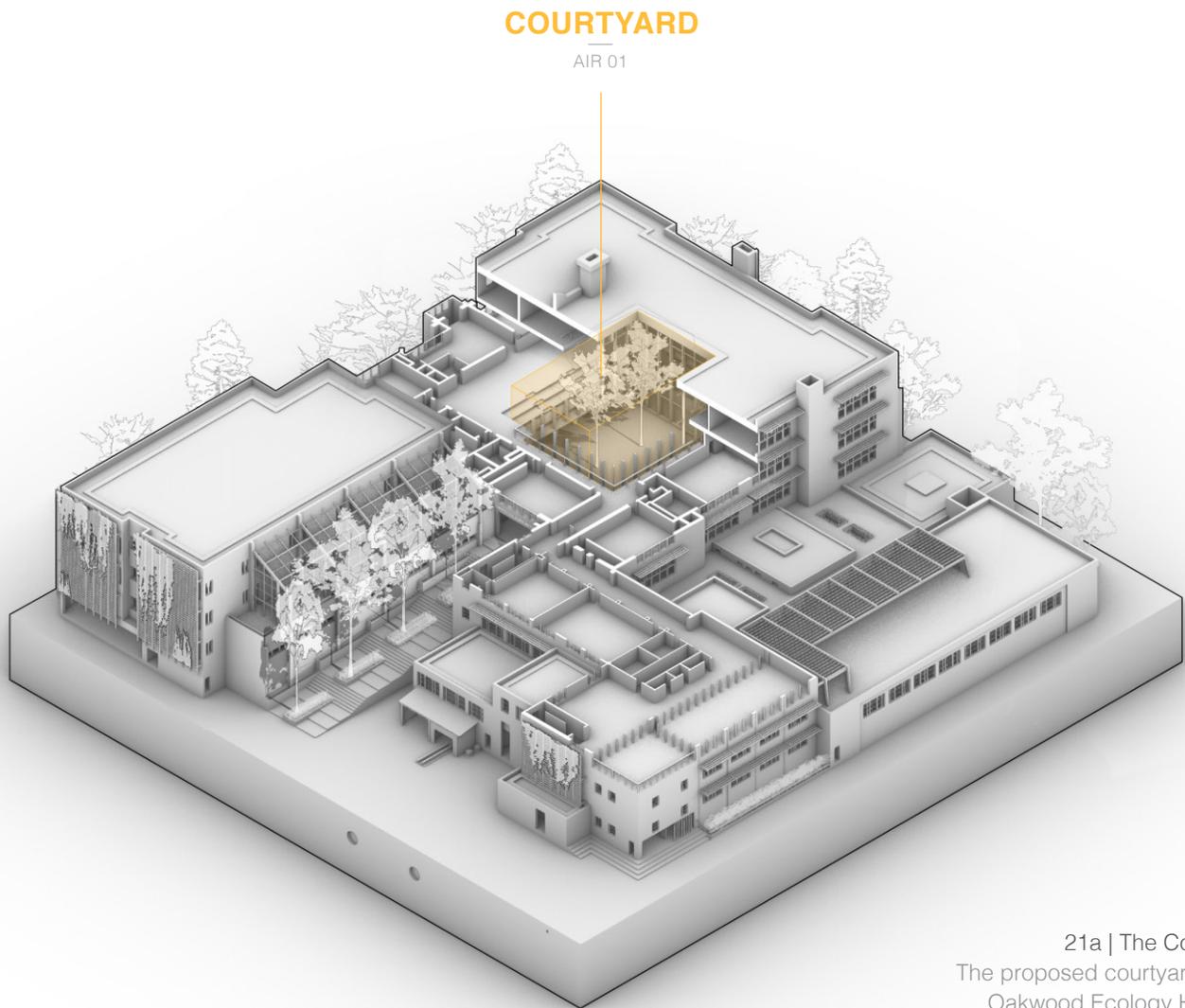
The Oakwood Ecology Hub reimagines Oakwood Collegiate Institute as a living organism that functions on the same premises as all other living things. The space is imagined to breathe and circulate air, produce energy and well-being from light, filter and cycle water, consume and produce food, and manage its own waste products. It is not the design of the building as a whole that adds value to this project, but the design of moments which embody these grounding ambitions and expresses them, didactically, to the students who occupy and take pride in this space each and every day. A total of ten life-centered design interventions have been conceived of for the space and have either been carved out of or sculpted on to the existing architecture (fig.21). Any of these interventions could be imagined as result of the Generative Urban Design Ideas Charette that was later brought to life.





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The open-air courtyard carves a monumental space from the original century-old school to primarily acts as a symbolic representation of the need to diffuse interior and exterior spaces, but the sunspace also mitigates heating and cooling loads passively. The stack effect embedded in the design of this spaces allows excess heat from the interior spaces that line the courtyard to be ventilated vertically to outdoor spaces. Beyond the conceptual and functional directives of the space, there is also a profound experiential one which is that the courtyard enables a direct physical and visual relation between teaching spaces and natural spaces at all times. The relation between the two thus becomes a focal point of the student's learning experiences.

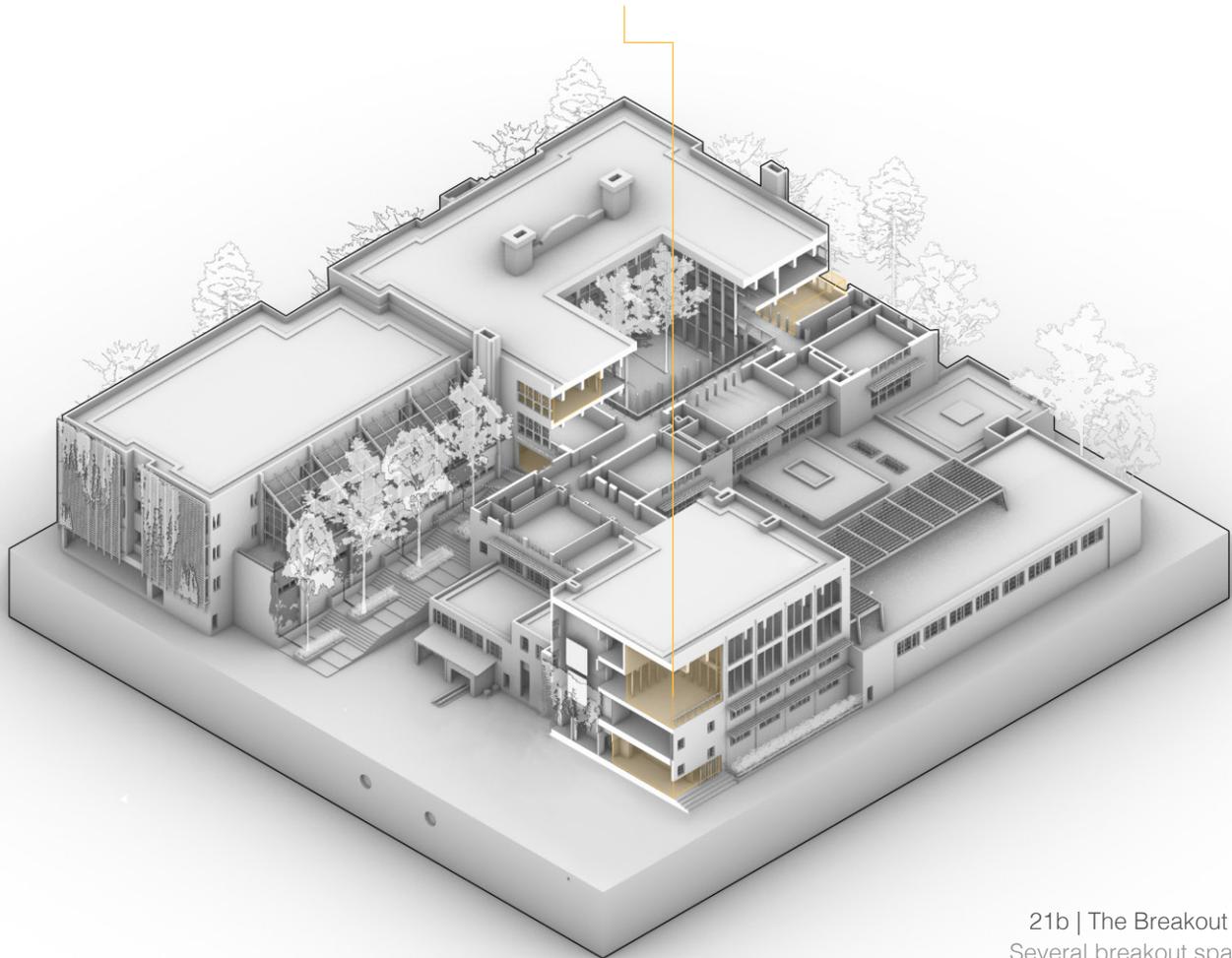


21a | The Courtyard
The proposed courtyard of the Oakwood Ecology Hub has been conceived as the seed from which an abundance of life may one day emerge - even in a seemingly barren host.

Lining the courtyard and at other critical moments where interior and exterior conditions must be dissolved are a number of breakout spaces that introduce a new typology for teaching spaces. Each proposed breakout space carves away the walls of existing spaces to reintroduce fresh air and natural light throughout the school. The breakout spaces encourage spontaneous interactions between individuals that take place in an abundance of fresh air and natural light beyond the classroom setting. The breakout spaces are conceptually imagined as riparian zones between two dramatically different landscapes where significant interspatial relations can take place.

BREAKOUT SPACES

AIR 02



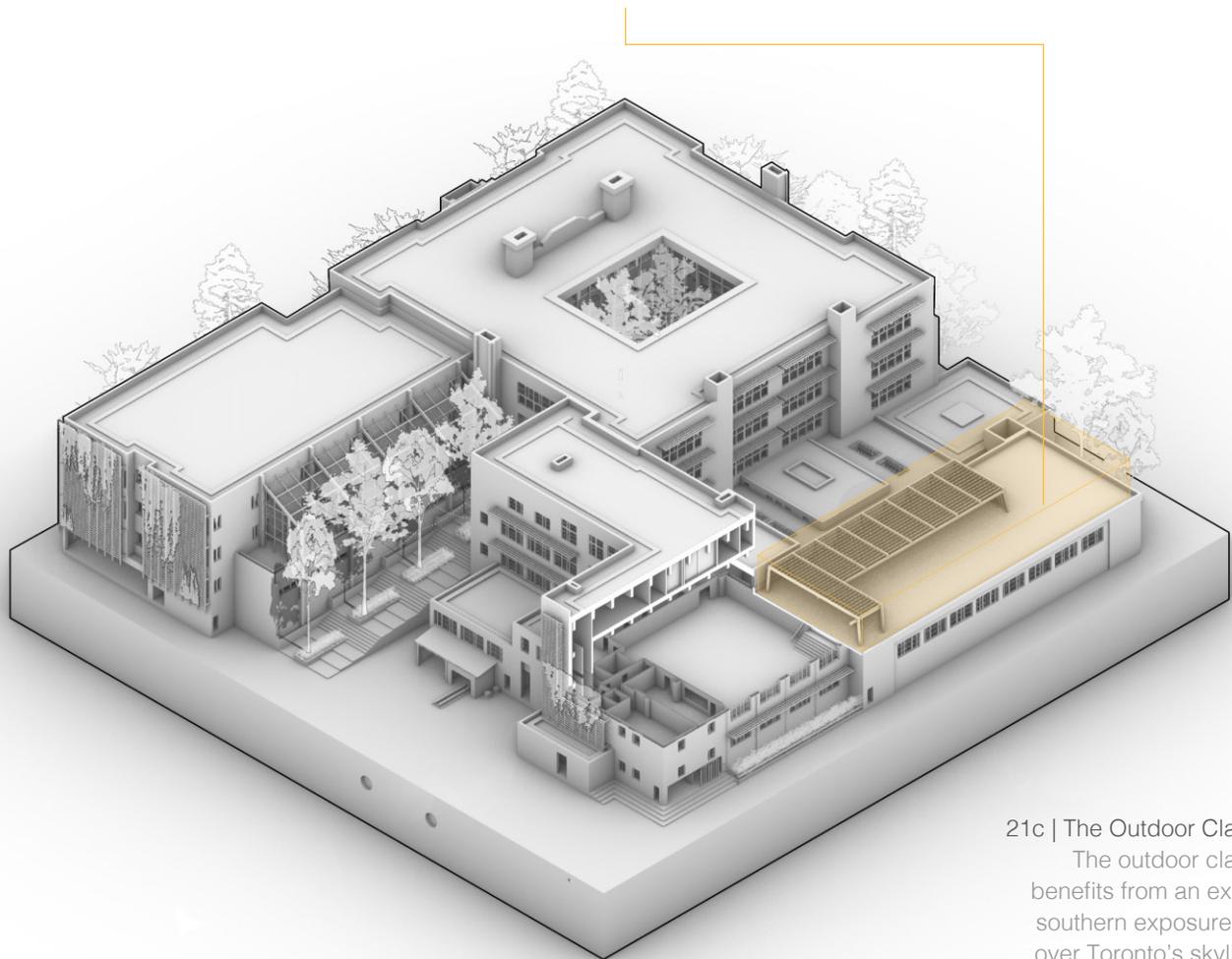
21b | The Breakout Spaces
Several breakout spaces line the proposed courtyard and offer students an opportunity to occupy dignified and beautiful spaces outside of class time.

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The south-facing exterior classroom repurposes the space around an existing solar array as a productive space that is conducive to food production and teaching. The ambition of the space is to forefront light as a natural entity that yields immense power an opportunity. Furthermore, the space is privileged by an expansive view over the city's downtown core to situate the urban regeneration.

OUTDOOR CLASSROOM

LIGHT 01



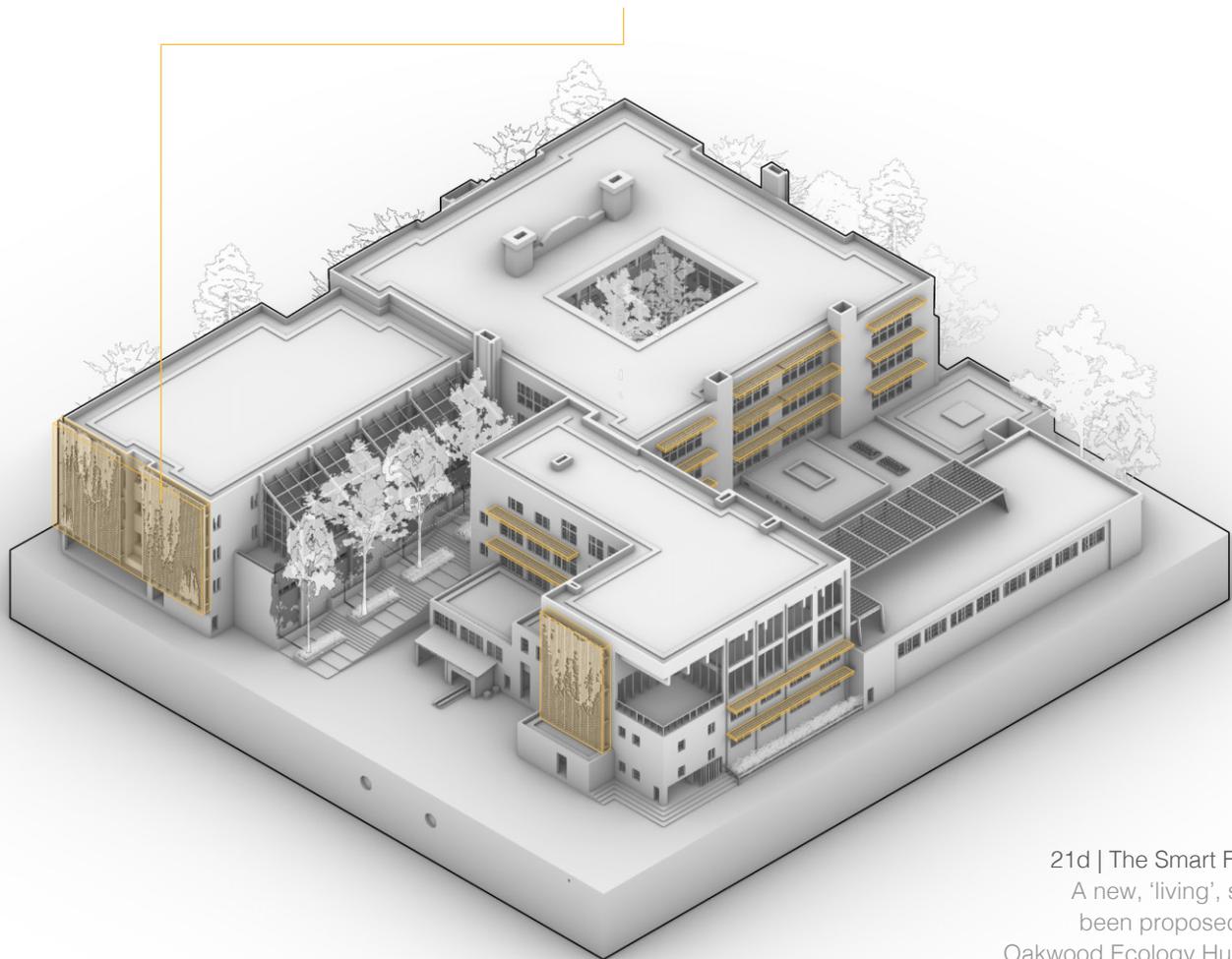
21c | The Outdoor Classroom

The outdoor classroom benefits from an expansive southern exposure looking over Toronto's skyline. The space introduces program to a previously inaccessible area and also offers a chance at new programming.

Smart facades along the building's exterior respond dynamically to the light that hits the buildings throughout the seasons. Not only do offer a means of mitigating excessive heating in summer months, they also introduce an element of beauty that the community at large can benefit from. Intricately designed and abundant in growing matter, the new facades dignify the space and signify it as a space worthy of further consideration and expansion.

SMART FACADES

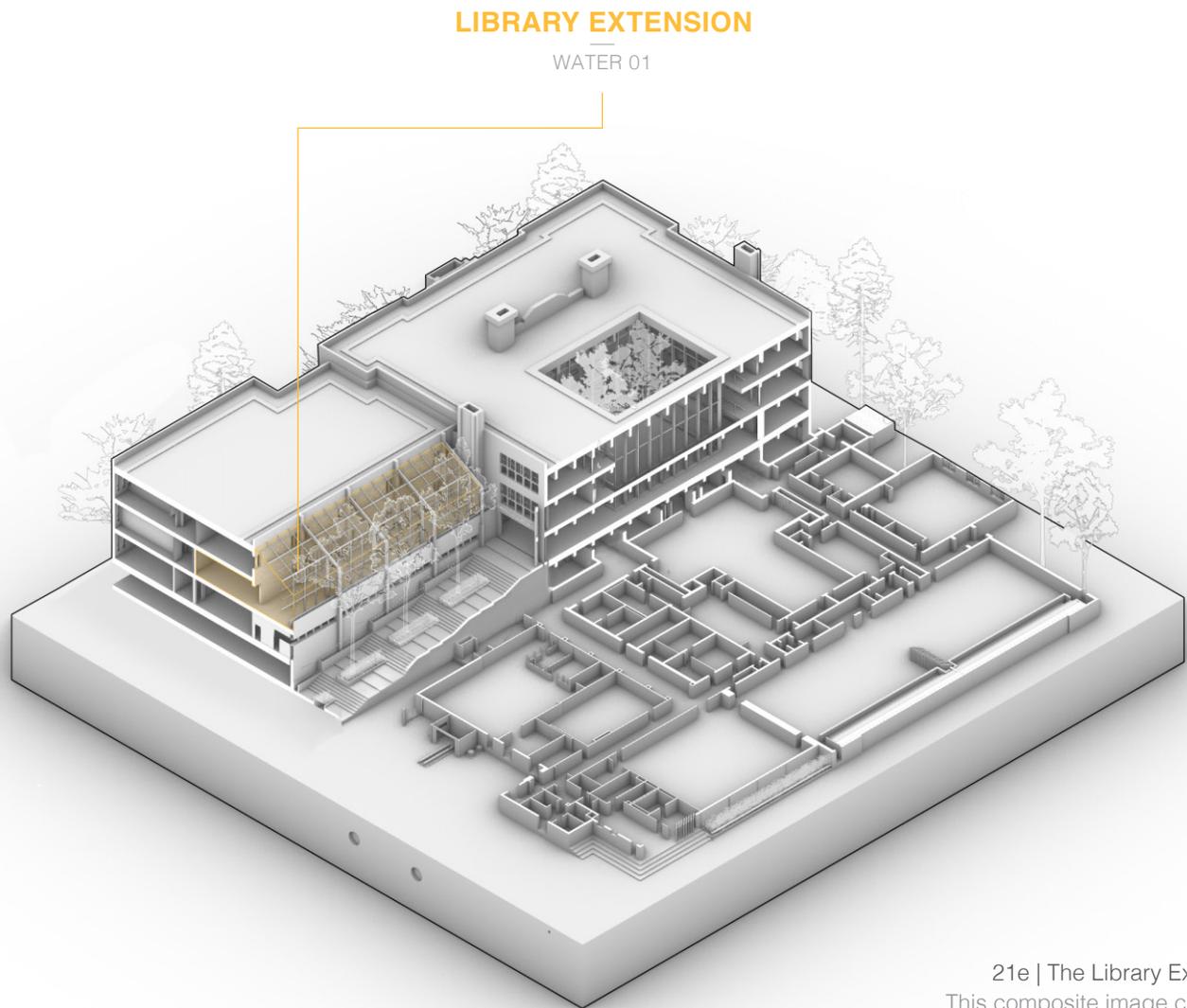
LIGHT 02



21d | The Smart Facades
A new, 'living', skin has been proposed for the Oakwood Ecology Hub which simultaneously dignifies the building in the public's eyes and offers passive cooling opportunities.

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The exterior extension onto the existing library harvests and repurposes grey water that is captured by the roof and uses it to bring life to a space that is currently inaccessible. It is a didactic expression of reintegrating the building as a whole with the natural processes that have previously been interrupted by barren civic developments. The study space itself overlooks the reclaimed yard and a number of the other life-centered designs as a constant reminder of the continuous improvements that can be brought to our existing landscapes.

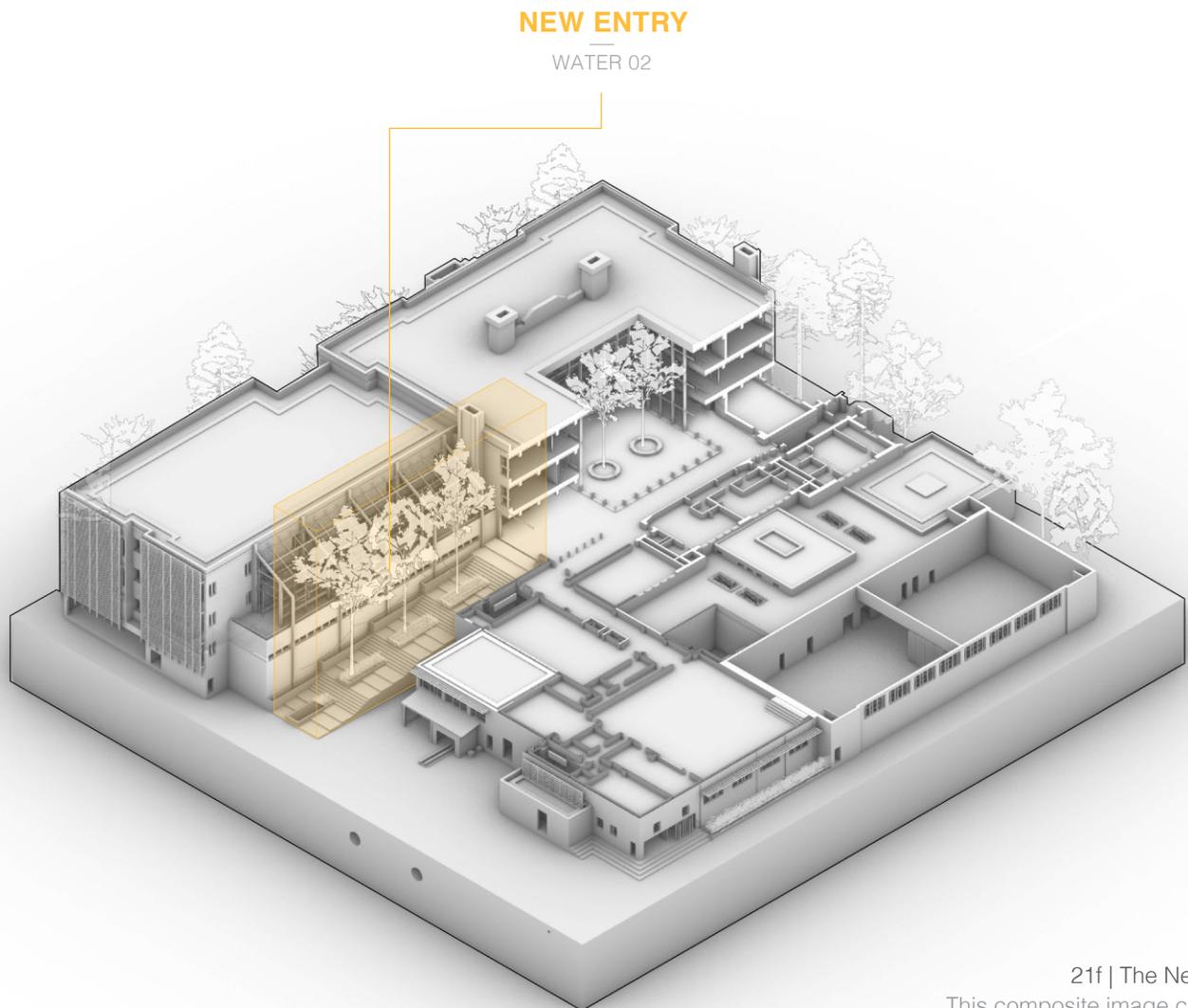


LIBRARY EXTENSION

WATER 01

21e | The Library Extension
This composite image compiles a series of sectional cuts through the Oakwood Ecology Hub then annotates a moment of significance.

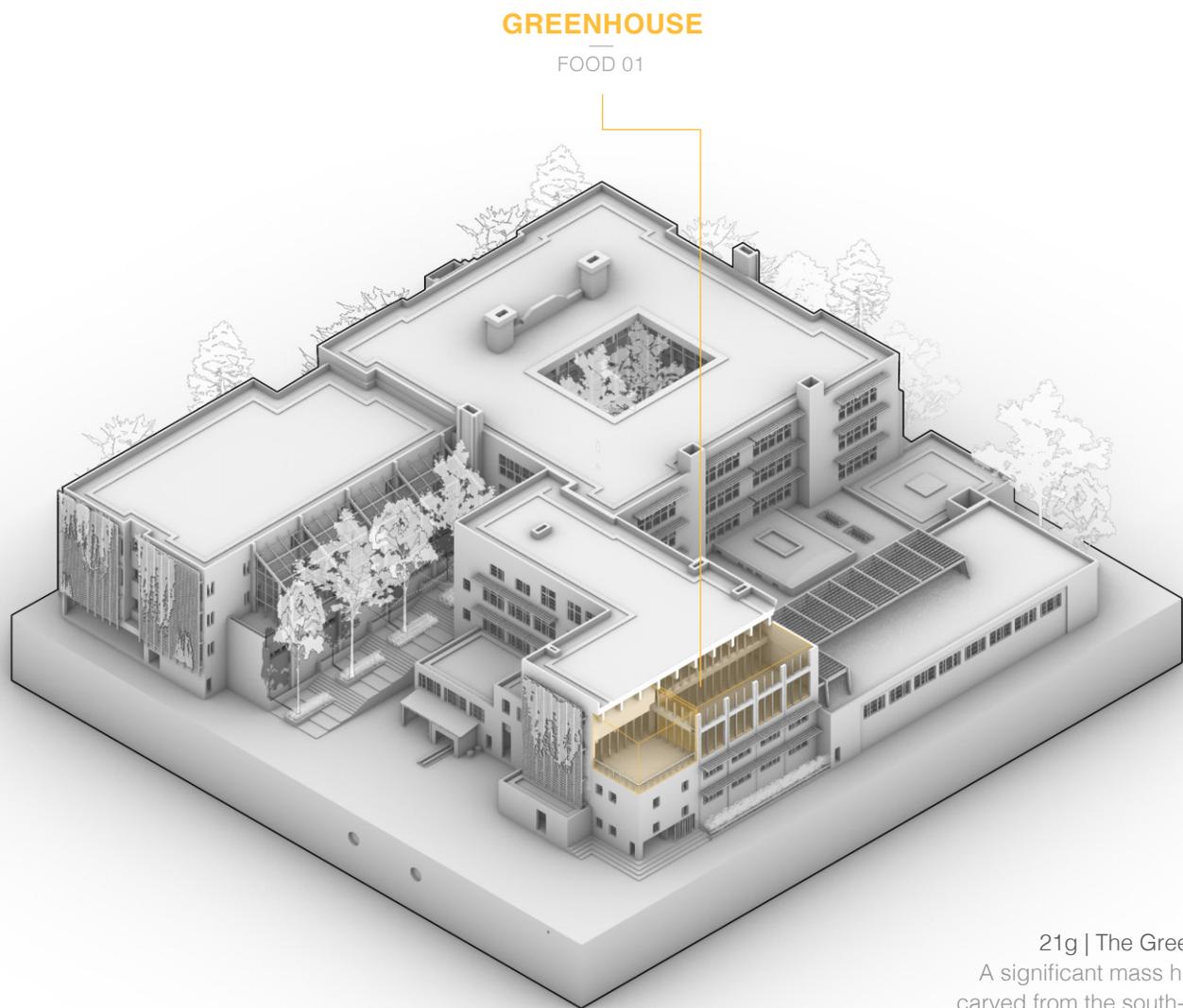
The new landscaping strategy on the buildings west façade reconnects the ground floor of the building with the existing grade towards the school’s yard. It offers a means of not only redirecting water towards the yard where it can be allowed to collect and form new habitats, but also of redirecting students towards the one patch of undeveloped space in the immediate urban context. Its terraced design bridges the two zones and offers opportunities for water and people to congregate in a productive manner.



21f | The New Entry
This composite image compiles a series of sectional cuts through the Oakwood Ecology Hub then annotates a moment of significance.

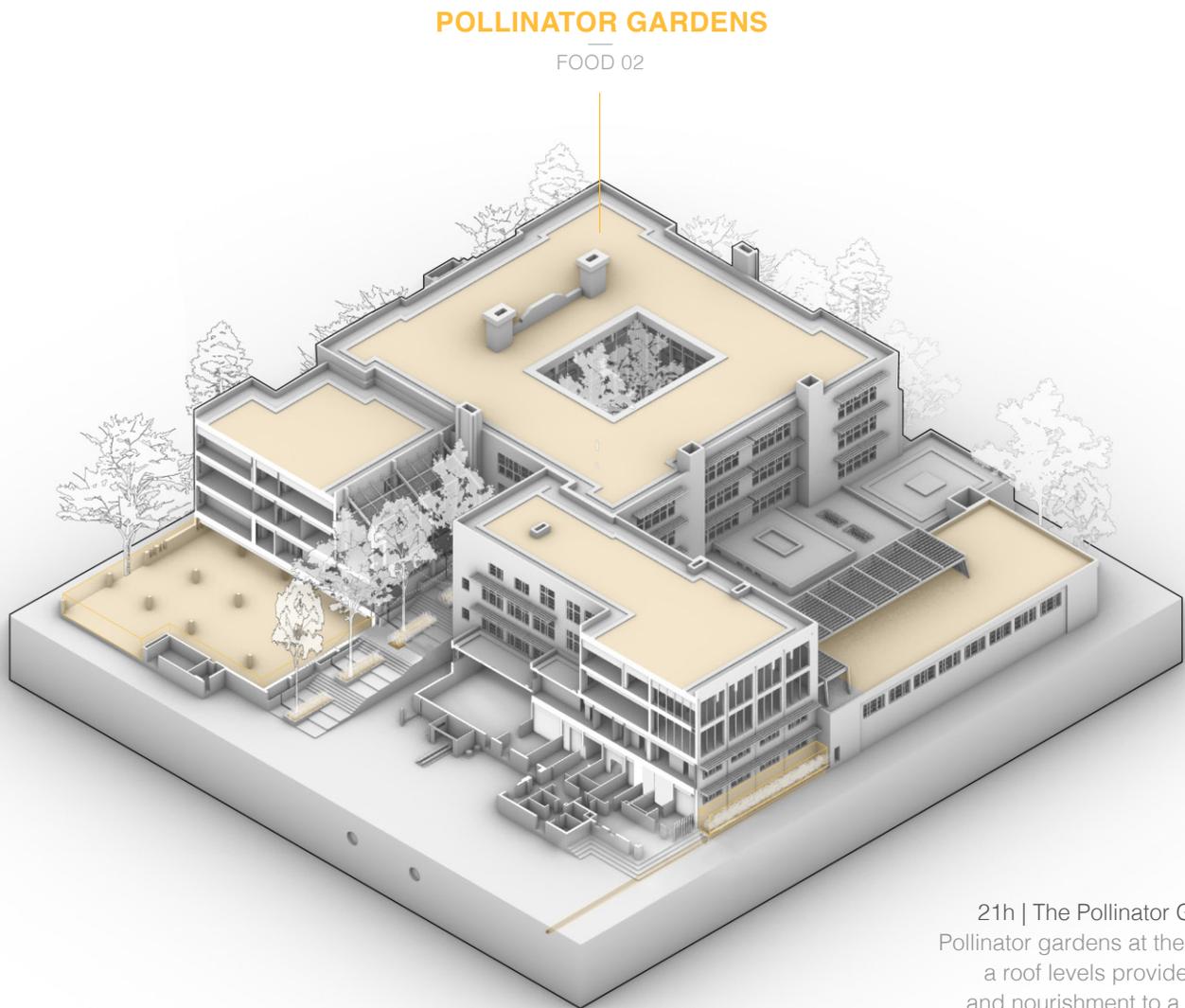
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An interior and exterior greenhouse in the building's southwesterly extension reintroduce food production to the urban setting and to teaching. Here, immediately adjacent to the existing cafeteria, students are encouraged to participate in the production of food in a setting that is currently not conducive to growing. Additionally, the cultivation of living matter is a profoundly moving experience that is often an eye-opening experience to young students who may not have an understanding of what it means to nourish such a dense population.



21g | The Greenhouse
A significant mass has been carved from the south-western extension of the school to make space for year-round food production that students can partake in.

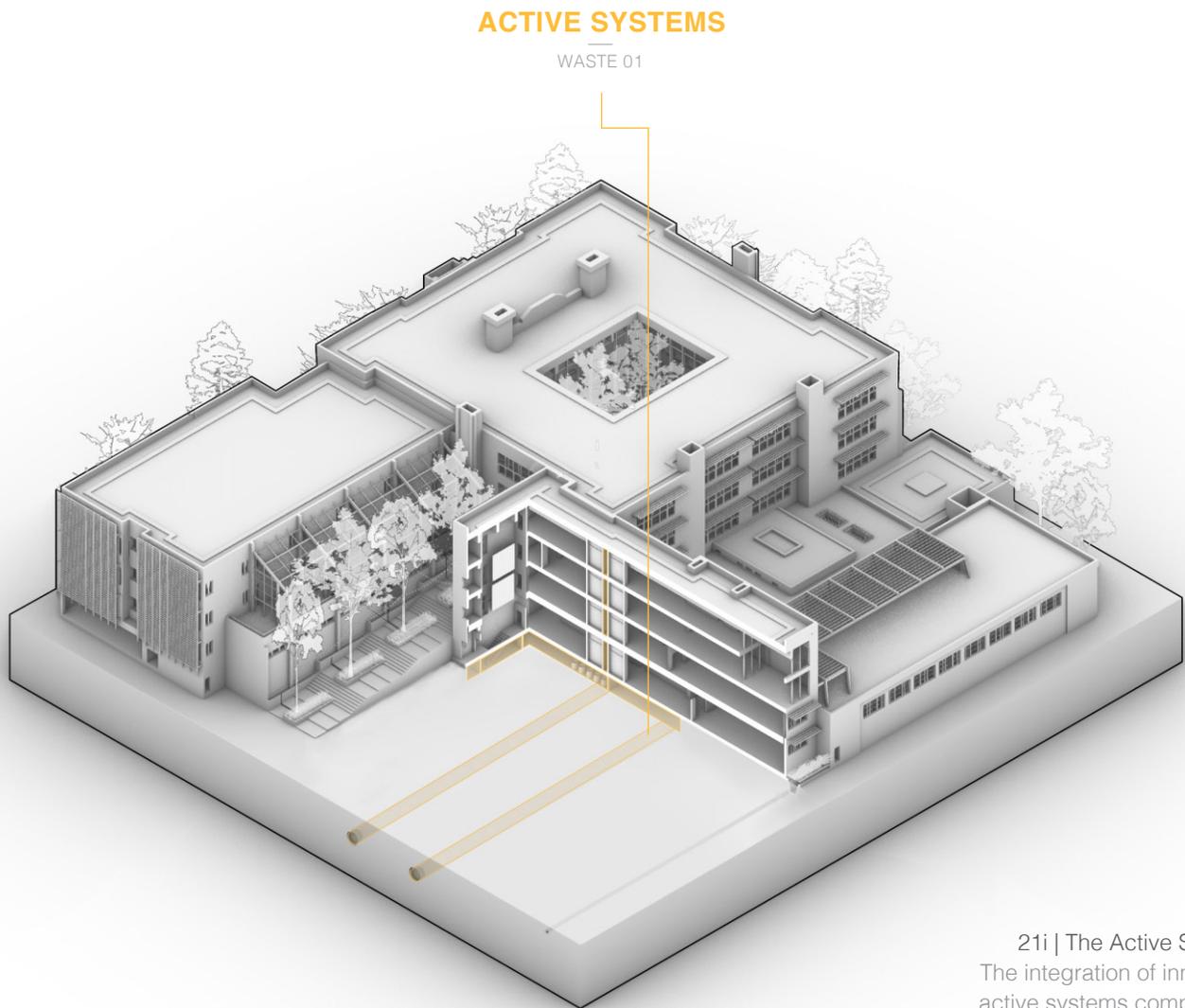
Numerous pollinator gardens on any unusable roofs stand as a testament to the Oakwood Ecology Hub’s commitment to not only be a hospital environment for students, but for other species as well. The gardens, which currently only exist in small planters in the yard, offer nourishment and habitat to a number of flora and fauna while also offering a means of introducing passive cooling and water filtration. The joint conceptual and performative qualities of the spaces are a prime example of how ecological thinking offers opportunities for multispecies flourishing.



21h | The Pollinator Gardens
Pollinator gardens at the ground
and roof levels provide habitat
and nourishment to a number
of other species but also offer
a chance to reintroduce natural
processes to the buildings
functionality.

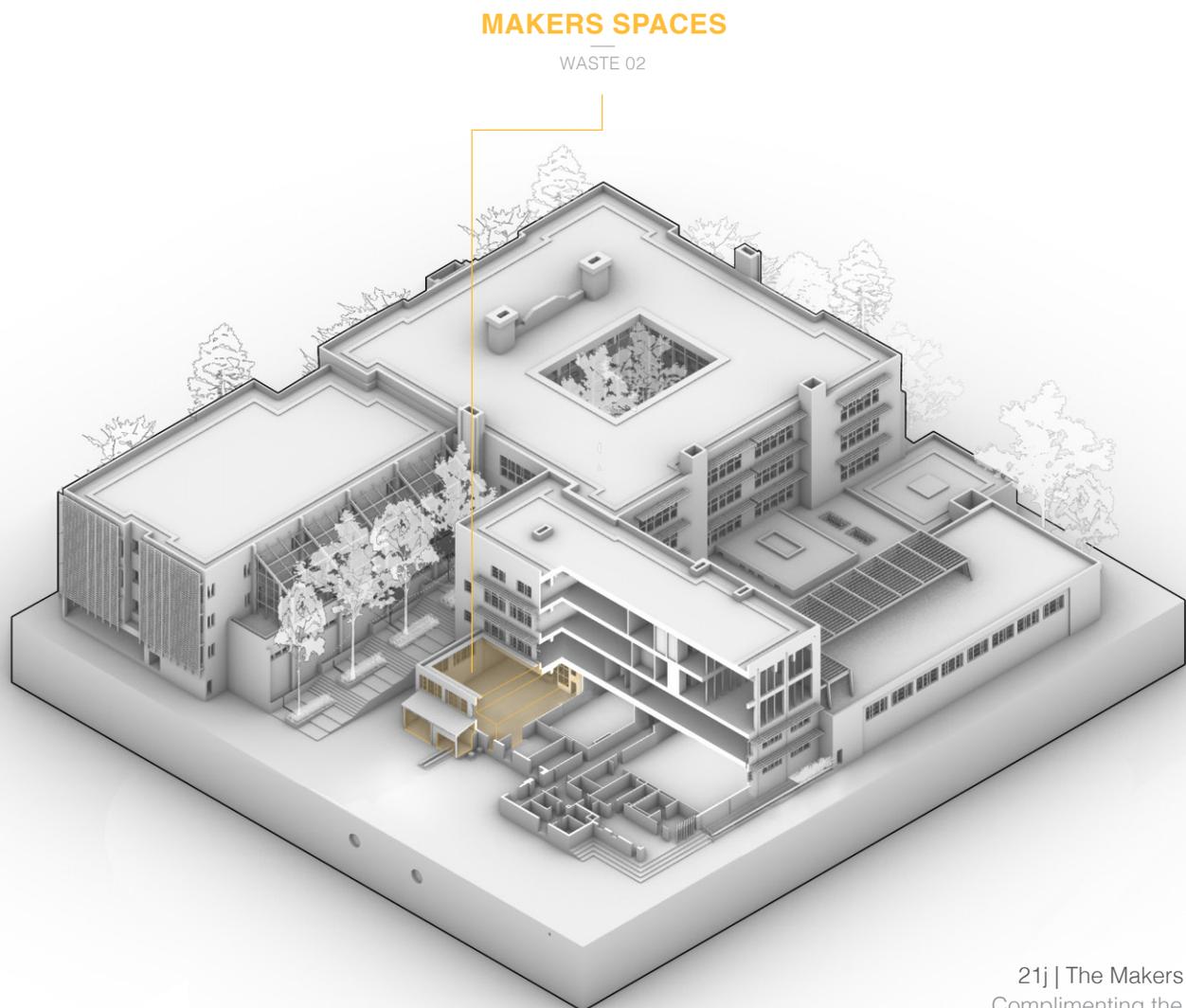
03

New and innovative active systems such as vacuum or compostable toilets begin to didactically express how important it is to consider waste as something that is not without value. These kinds of systems, positioned throughout the school, give space to technological innovation as a means of complimenting passive systems in fostering sustainable buildings. Waste can be recycled towards the yard as compostable matter, from which more life can take root, ultimately introducing a positive feedback into the school's operating system.



21i | The Active Systems
The integration of innovative active systems compliments the many passive strategies and exhibit alternative ways of fostering a more sustainable building ecology.

Value-added manufacturing can be introduced as a critical component to Oakwood Collegiate Institute’s adaptive re-use into the Oakwood Ecology Hub through a space dedicated to the creation of interventions whose materials are sourced directly from parts of the school’s demolition. An existing workshop at the school’s basement level can be renovated and new exterior spaces created in order to provide facilities that are conducive to larger scale design-build projects. In this way the hub can offer students the tools and space to partake in the transformation of their schools – beyond just speculative design.



MAKERS SPACES

WASTE 02

21j | The Makers Spaces
Complementing the existing workshop, the new makers' spaces are designed to support the design-build initiatives this thesis is promoting.

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Each of the Oakwood Ecology Hub’s ten proposed interventions ameliorate the functional performance of the school in some way or another with regards to it acting as a living organism that responds to air, light, water, food and waste, but there is also an experiential element too that is critical to their success. By populating our built landscapes with one ecologically minded intervention at a time we create more and more opportunities for humankind to engage with nature in countless meaningful ways and at all times. Each idea, no matter how small, offers a chance to de-stratify ecological education and to reintegrate it with education as a whole. No longer will it be positioned as a subject that only gets engaged with at peripheral and inconsequential moments in a student’s academic career, but instead it will be the foundational parameter upon which all other education may take place. Rather than explicitly engaging with ideas of environmental stewardship and social advocacy only once every two years and four months, students will be offered the opportunity to engage with them 365 days of the year. Each of those days is an opportunity for students to form a spiritual connection with the environments they occupy and help to create, and it is through this profound sense of agency, engagement and empowerment that a larger societal transformation can take place.

By offering students the chance to engage with natural processes and environments at all times we also offer them a chance to foster their own understandings of the valuable role they play in preserving and augmenting them. Rather than being conceived as a space where knowledge is simply offloaded on students in prescribed class times, as is the current paradigm across the Toronto District School Board, these Regenerative Urban Ecology Hubs privilege play, discovery, care, creation and sharing as means of learning at all times. The proposed Oakwood Ecology Hub exhibits this. At the start of each school year, students could gather in the open-air courtyard and encompassing breakout spaces to bask in the warm fall sun while catching up with friends or studying (fig.22). As fall settles into winter the schoolyard comes alive as a host of activities otherwise unavailable in the harsh urban setting surround the school are made possible – bonfires, snowshoeing, skating and cross-country skiing (fig.23). When spring rolls around students bask once again in the emerging warmth and light and begin to seek transitional spaces between the indoors and outdoors once again to begin their end-of-year construction projects, harvest melting snow in new planters or else simply to study in spaces surrounded by nature (fig.24). With the promise of summer around the corner at the end of each school year, students begin to reap what

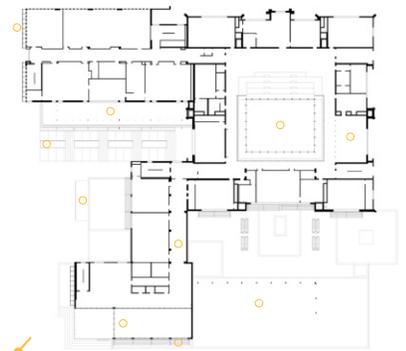
22 | The Courtyard and Adjacent Breakout Spaces

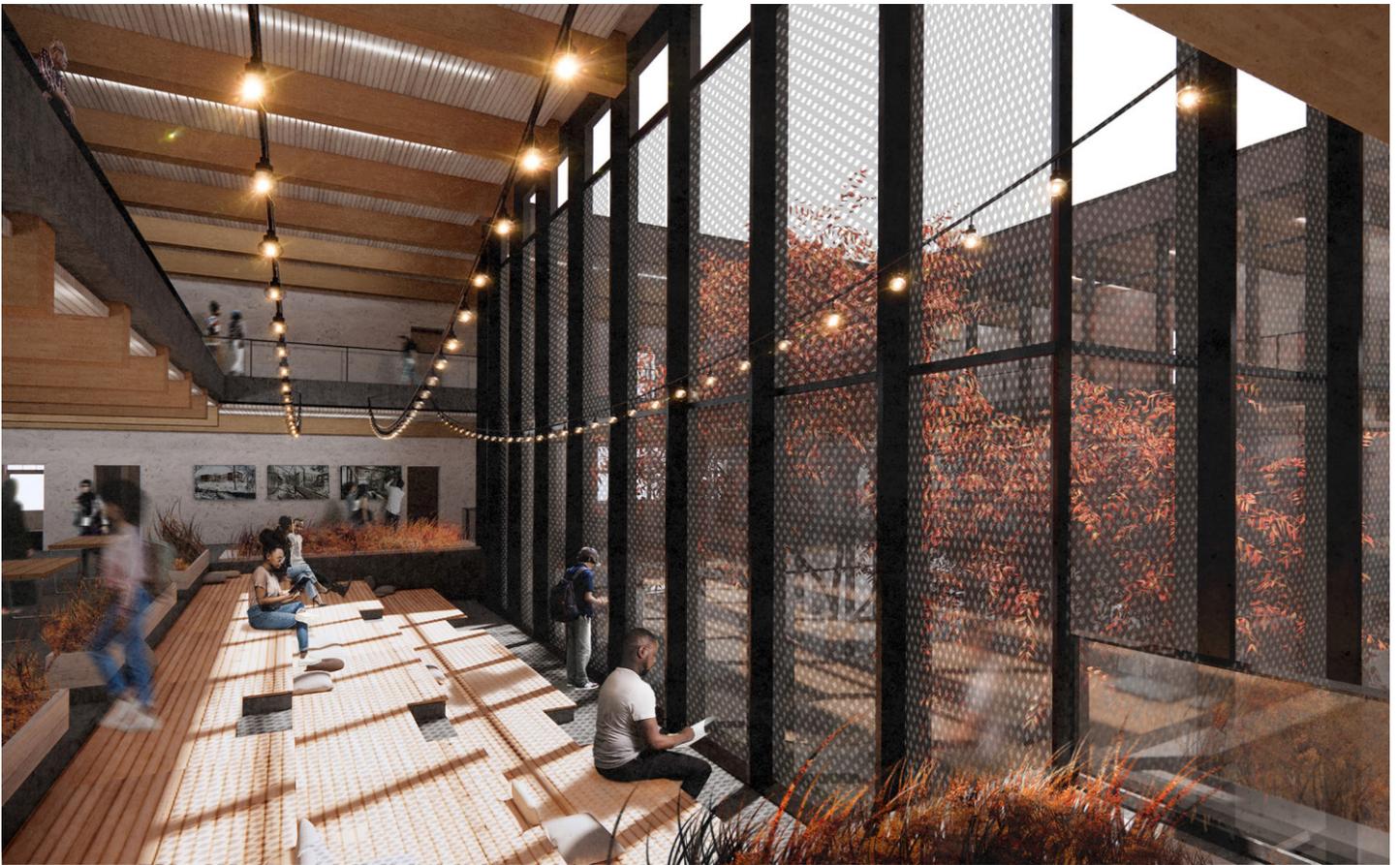
Imagined as the focal point of the Oakwood Collegiate Institute’s transformation, the proposed courtyard space allows light and air to finally permeate the building while offering physical and visual connections to nature at all times. Encompassing breakout spaces offer students a chance to socialize and study in dignified and beautiful spaces - beyond the classroom.



23 | The Schoolyard's Rewilding

An ambitious rewilding strategy could transform what is currently an archetypal school field into a rich ecosystem that supports a host of new activities that immerse people in nature in all seasons opposed to simply at manicured moments. Eventually, it is imagined that the school’s rewilding plan could even extend beyond the yard and permeate the broader urban fabric that is so desperately in need of transformation.



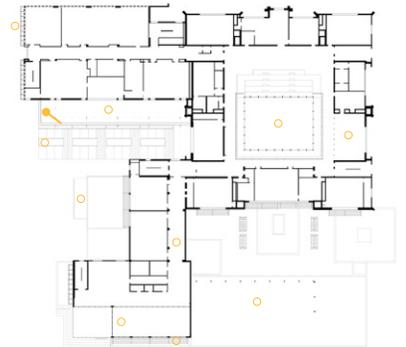


they have sown in the previous months and host celebratory feasts with food from their own gardens and in spaces previously unimaginable in schools (fig.25). At any point of the school year students are reminded of the immense beauty and repose that is to be found in engaging meaningfully with nature – and this extends beyond the confines of class time too. Last but certainly not least in the experiential sequence of this space is ambitious rewilding program for the yard, which is available to the entire public at all times. Where currently exists a monoculture of manicured grass could become a veritable habitat for all sorts of species. The Oakwood Ecology Hub imagines its yard as a reclaimed brownfield site, where the soil has been treated, topography has been created, water is allowed to collect and is filtered, native species are reintroduced, access is opened up once again, and most of all, people are encouraged to congregate in this uniquely vibrant and fertile space in an otherwise barren setting.

Through the quasi-architectural designs of a Generative Urban Design Ideas Charette and of a Regenerative Urban Ecology Hub, environmental stewardship and social advocacy can become manifested once again in tactile creations that not only empower a new generation of ecological ambassadors but also inspire a monumental movement towards urban regeneration and remediation. The value of this thesis project is not in determining one solution, but is instead in identifying and fortifying architecture’s role in exhibiting the next step towards restoring ecological knowledge and conduct within education as a whole. The paradigm shift being advocated for here offers a means of mitigating waning legislative support though the regeneration of ecological inquiry in a way that empowers tomorrow’s ecological ambassadors while upholding the core values of ecological education today. This is how architecture begins to elicit new learning paradigms, building typologies and urban organizations. This is how we cultivate a new normal for pedagogical, ecological and ontological conduct to carry us towards a collective future.

24 | The Library Extension
Overlooking Several
Interventions

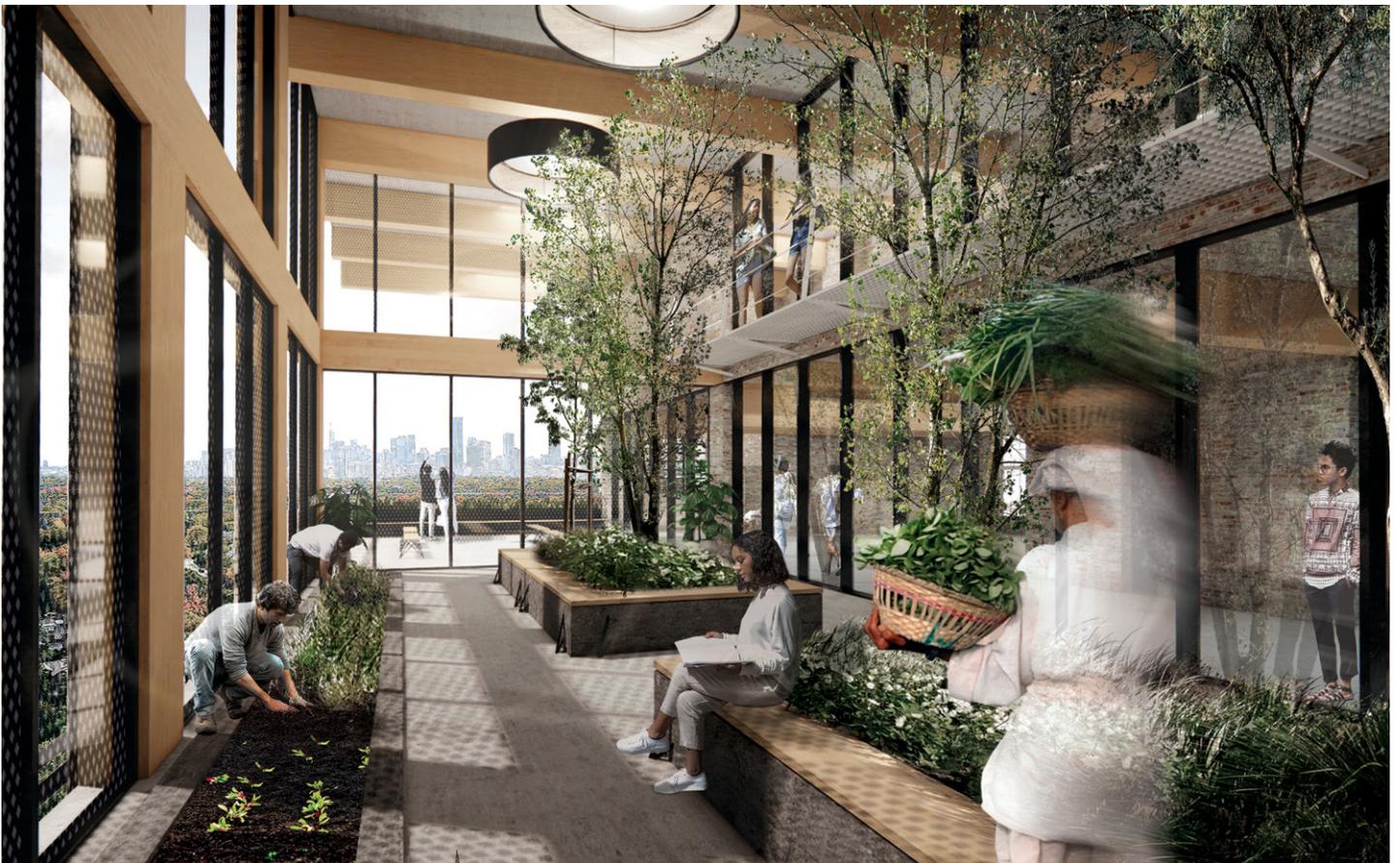
Many of the new spaces proposed for Oakwood Collegiate Institute have been imagined as riparian zones which diffuse the harsh divide between interior and exterior such as this sheltered extension to the existing library which overlooks the newly planted roofs, the makers’ space and the new landscaping that leads to the building’s new entrance.



25 | The Greenhouse
Overlooking Toronto’s Urban
Fabric

Food production is a profoundly moving experience that has somehow been removed from education. The greenhouse space aims to address this by offering a beautiful space for students to plant, harvest and consume food. The space overlooks the Toronto skyline, standing as a reminder that even urban settings can foster new life.





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- 44 Simon Unwin, "Place Creation," in *Children as Place-Makers: The Innate Architect in All of Us*, (New York: Routledge, 2019), 54.
- 45 Jason McLennan, "Our Children's Cities: The Logic and Beauty of a Child-Centred Civilization," in *Transformational Thought: Radical Ideas to Remake the Built Environment*, (Portland: Ecotone Publishing, 2012), 158-73.
- 46 Emma Kitley, *Playing for Citizenship: Reinstating the Urban Child*, unpublished dissertation, (Bartlett School of Architecture, London, 2016); Simon Unwin, "Endnote," *Children as Place-Makers: The Innate Architect in All of Us*, (New York: Routledge, 2019), 175.
- 47 Veronica Uzielli, "Toronto Outdoor Education Schools and Related Topics," interview by Tristan O'Gorman, October 13, 2021.
- 48 Donna Haraway, "Making Kin: Anthropocene, Capitalocene, Plantationocene, Chthulucene," in *Staying with the Trouble: Making Kin in the Chthulucene*, (London: Duke University Press, 2016), 99-104.
- 49 Wade Davis, *The Wayfinders*, (Toronto: House of Anansi Press, 2009).
- 50 Bruce Mau, "The Real Design is a Metadesign – A Platform for Continuous Improvement," in *MC24: Bruce Mau's 24 Principles for Designing Massive Change in your Life and Work*, (New York: Phaidon Press, 2020), 375.
- 51 Leanne Betasamosake Simpson, "Land as pedagogy: Nishnaabeg Intelligence and Rebellious Transformation," in *Decolonization: Indigeneity, Education & Society* 3, no. 3 (2014): 9.
- 52 Amy Edmondson, "Management Challenges in Urban Transformation: Organizing to Learn," in *Ecological Urbanism*, ed. Mohsen Mostafavi and Gareth Doherty (Baden: Lars Müller Publishers, 2010), 312-313.
- 53 Veronica Uzielli, email to author, April 9, 2022.
- 54 "About Us," Toronto District School Board, <https://www.tdsb.on.ca/About-Us>.
- 55 Integrated Urbanism Studio, "Interactive Mapping," University of Toronto John H. Daniels Faculty of Architecture, Landscape and Design, accessed May 2, 2022, <https://academic.daniels.utoronto.ca/urbanism/map/>

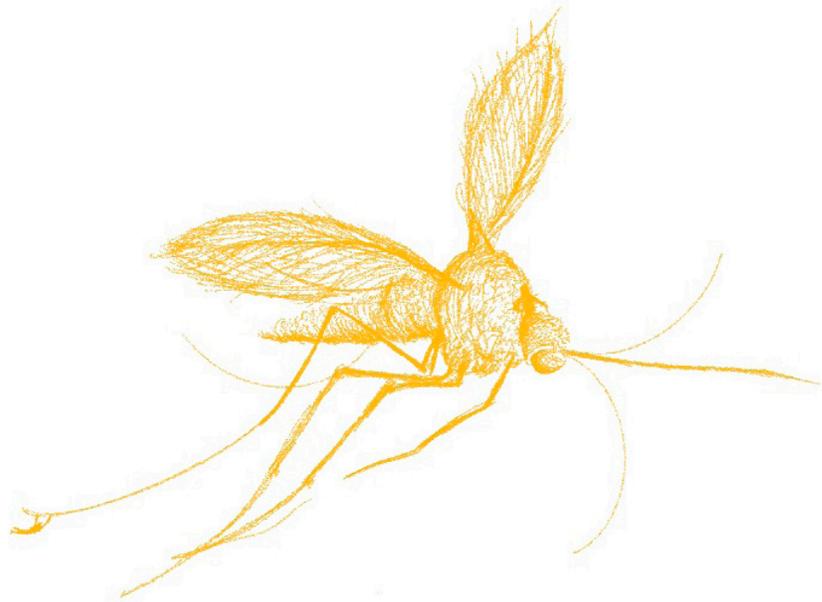
The students who partook in the Integrated Urbanism Studio at University of Toronto's John H. Daniels School of Architecture have done a phenomenal job of gathering a sleuth of data pertaining to the urban condition of Toronto and then presenting it graphically and also making it publicly available. I would not have been able to compile and layer my own mappings had they not done the leg work. I encourage anyone looking to get a comprehensive understanding of the quantitative nature of Toronto to explore this resource.

- 56 Lesley Wallace, architectural drawing set shared with author, March 4, 2022.
- 57 "Facility Condition Index," Oakwood Collegiate Institute, Toronto District School Board, <https://www.tdsb.on.ca/Find-your/Schools/School-FCI/schno/5545>
- 58 Lesley Wallace, "Oakwood Collegiate Institute," interview by Tristan O'Gorman, March 3, 2022, notes.
- 59 Robin Pilkey, Letter to Minister of Education Indira Naidoo-Harris, April 27, 2018.
- 60 Lesley Wallace, "Oakwood Collegiate Institute," interview by Tristan O'Gorman, March 3, 2022, notes.
- 61 *ibid.*

26 | The Allegory of the Mosquito

The fifth in a series of digital sketches, this drawing playfully juxtaposes humans and other biotic and abiotic beings with enough scalar ambiguity to echo the thesis' stance that humankind needs to establish a new relation with the natural world.

T. O'Gorman



CONCLUSION

247,000+ New Ecological Orientations

A new normal offers us a chance to redefine humankind's relationship with built and natural landscapes. The two-pronged quasi-architectural approach being proposed here dissipates the entrenching barriers to ecological inquiry by setting up the conditions for continuous improvement. Through the Generative Urban Design Ideas Charette and the Regenerative Urban Ecology Hubs attest that architects have the agency to offer informed pedagogical, ecological and ontological designs that can adapted in perpetuity.

No longer can opportunities for ecological inquiry be considered peripheral, they must become central in the education and life experiences of all children. Those moments of beauty and innovation and immersion that are currently exclusive to remote outdoor education centres must become the conventional, and students must be engaged in that process of transformation. Student participation is critical not only because the intrinsic values of reciprocity and stewardship that come with these opportunities will undoubtedly empower them in taking on the greatest challenges of our times, but also because they are perhaps the best equipped to do so. Their spontaneity, curiosity and unbound enthusiasm for place-making is uninhibited and thus conducive to the most aspirational vision of what could become of the cities we occupy.

“These voices matter because they can still be heard to remind us that there are indeed alternatives, other ways of orienting human beings in social, spiritual, and ecological space.”⁶²

In identifying and fortifying architecture’s role in regenerating ecological education in the Toronto District School Board, this thesis project has perhaps brought to light more questions that it answers - as it should. It has never been the position of this project that there is one single iteration that could mitigate the pervasive and entrenching challenges that have compromised ecological education. Instead this thesis attests that what is desperately needed is a collaboration between educators, ecologists, designers and all other members of society who can offer their voices to the critical movement towards restoring social and environmental values in education as a whole. Just as this thesis actively encourages the participation of the Toronto District School Board’s 247,000 students in creating an ecologically minded built environment, it also asks others to lend their wisdom, resources, and energy to continue the ideas being presented here and to help establish a new normal.

DESIGNING FOR PERPETUITY

What if, rather than casting ecological education constantly to the side, provincial legislature and public policy supported initiatives that brought ecological education into all classrooms. What happens then, if rather than engaging with principles of environmental advocacy and ecological stewardship for one day every two years and four months, the 247,000 students in the Toronto District School Board engaged with them on a daily basis? What if enough similar programs were designed that this same pedagogical reform could be realized in every school board across the province or even country? What if, furthermore, each and every single one of these programs was so well integrated with education as a whole that ecological inquiry could be sustained for the entirety of a student’s scholastic journey from kindergarten through to grade twelve? How much more well equipped would the next generation of ecological ambassadors be then to take on the seemingly impossible task of restoring a common world?

27 | Oakwood Collegiate Institute (Next, Left)

This aerial view, provided by the students of Oakwood CI, highlights the archetypal quality of the school and the barren nature of its yard and the surrounding urban context.

28 | The Oakwood Ecology Hub (Next, Right)

This composite image layers on the proposed life-centered interventions and several instances of urban rewilding to highlight the potential for a radical new normal with regards to pedagogical conduct, ecological prosperity and ontological priorities.

⁶² Wade Davis, “Century of the Wind,” in *The Wayfinders*, (Toronto: House of Anansi Press, 2009), 217.





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