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# CoLLaboratoire: Activating Ecological Knowledge through Community Design Experiments


## ABSTRACT

This paper introduces a new research initiative called *CoLLaboratoire*, a community embedded project with the goal of realizing a series of art-architecture installations that communicate some critical theme of sustainable living in the city. This project links together academics, students, community, and business leaders to address sustainability challenges together. It therefore serves as a medium for transdisciplinary scientific research requiring citizen-engagement while also creating a measurable impact with regards to sustainable living.

The goal of this initiative is to stimulate Montreal's collective intelligence by recovering memories of place and environment while serving as a model project of a sustainable city. *CoLLaboratoire* has adopted the urban corridor of Sherbrooke Street, a street that runs 31km from east to west in the city of Montreal, Canada. This research project has been adopted as an organizing principle for these urban installations, where each public art piece will have its own story. The resulting narrative from the collection of installations along the length of Sherbrooke Street will be at once, educational, interactive and experiential. The intent is to foster public awareness of natural systems and resilient urban infrastructures through community engagement, both during the design process and during the use of the public artwork after it has been installed. This may have the benefit of invigorating life in the city while addressing pressing problems of today. By using one of the city's main east-west axis we can disseminate the idea of context-specific sustainable living throughout the various communities.

In this paper, we will present our first design challenge/experiment in Montreal, in terms of its process, its outcome and our analysis. This project's main research questions are: What type of art-based installations can help heighten community awareness to issues, questions, or solutions regarding climate change? How can participation in the design of these art installations contribute to a deeper understanding and embodiment of sustainable practices for participants in the long term?


*Keywords:* Sustainable neighbourhood; Design process; Community empowerment

## 1. INTRODUCTION

*CoLLaboratoire*[1] is a research-creation initiative, which started on September 2014, in Montreal, Canada. The aim of this project is to better understand how the collaborative design of public art-architecture installations can contribute to a critique, deeper understanding and/or embodiment of sustainable urban, professional, community, and even human practices in the long term. It focuses on the design of art-architecture for public spaces as a practice in which the resulting representation and narrative can contribute to todays' imperative questions by pushing its disciplinary boundaries.

Through design experimentation, citizen engagement, and the construction of working prototypes installed in Montreal, these designs are intended to lead to scalable and measurable environmental benefits, such as green energy and food production, water conservation, greater community involvement, etc. It is a project under the auspices of the Concordia University Research Chair Integrated Design, Ecology, and Sustainability for the Built Environment (IDEAS-BE)[2], of which I am chair. This research project is also directly related to the worldwide initiative called Future Earth[3]. Future Earth is a global platform for sustainability research serving as a vehicle for communicating knowledge between sustainability sciences, business leaders, policy makers, and community leaders. The location of the United Nations Future Earth global secretariat is in Montreal. Montreal, a UNESCO city of Design, with its hybridity of cultures, languages, urban dynamism, and its leading place in the history of sustainability, is a fertile place for such an experiment in sustainable living.

Through this initiative we are planning, designing, and building public space urban installations with the intent of heightening climate change awareness, while also building capacity in citizenry to address issues together. The aim is to successfully make connections between academics, community members, artists, designers, architects, professionals, and business leaders, etc., in order to better address sustainability challenges. This research project has the inherent benefit of communicating the research directly to the community involved, and therefore also acts as an outreach project.

All installations are context sensitive, taking into consideration the concerns of the community in which they are intended. *CoLLaboratoire* has adopted the urban corridor of Sherbrooke Street, which runs 31km east to west across the city of Montreal in Canada as an organizing principle for all urban interventions and/or installations. This iconic Montreal street runs from the Parc Delphis Delorme and Paroisse Marie-Goretti nature area in the east to just west of Concordia University's Loyola Campus in Montreal Ouest. Along this corridor we will identify roughly 12 sites or hubs for artistic-architectural installations and interventions. The resulting narrative from the collection of these designs along Sherbrooke Street will be at once, educational, interactive and experiential.

One of the main goals for *CoLLaboratoire* is to stimulate Montreal's collective intelligence by recovering memories of place and environment and to serve as a model project of a sustainable city. These interventions serve as elements of a path to a sustainable, resilient future. In addition to the creation of site-specific interventions, we expect the broader societal impacts of this project to include greater networks for mobilization at the community level, better public understanding

[1] http://www.ideas-be.ca/collaboratoire.html
[2] http://www.ideas-be.ca/
[3] http://www.futureearth.org/

of solar energy, concept development for potential product commercialization and toolkits for effective participatory design.

The research questions that are at the core of this research project are: What type of art-based installations can help heighten community awareness to issues, questions, or solutions to climate change? How can the inclusion of the community in which the installation are embedded contribute to a deeper understanding and embodiment of sustainable practices for the long term? Specific installation sites are constantly investigated based on their historical importance, natural features, availability, and future possibilities. The site for our first design challenge was Concordia University's Loyola campus, which sits on the far west end of Montreal. We selected this site because we wanted the community of students, especially at Concordia to be deeply involved in our inaugural design challenge.

This paper is organized into three main sections. We will first introduce the historical context and theoretical canvas for *CoLLaboratoire*. Here we consider the transdisciplinary approach of designing art-architecture for the public realm. We will then present the details of our first design challenge on the Concordia Loyola campus, in terms of the process we adopted, the projects resulting from the design challenge, and our analysis. We conclude with insights on this first experiment and suggest a variety of ways forward.

## 2. THEORETICAL BASIS OF RESEARCH PROJECT

Although the scientific discovery of climate change began early in the 19th century when changes in the climate were first suspected, these ideas were met with disbelief at the time. It was becoming known only in the late 1950s and early 1960s that questions of human emissions were causing not only environmental degradation but were also disrupting climates around the world. It was at this time that radical designers entered the conversation of environmental degradation [1].

Since the 1960s designers have been ardently working towards addressing the complexity of the pressing questions of their time. The discourses related to environmental design started at this time, and have shifted since. In the 1960s, the drive towards holistic approaches of public and individual human settlements gave rise to the idea of environmental design, as a means to transcend the boundaries between various design disciplines: architecture, landscape, urban and product design [2]. This first “environmentalism” culminated, amongst other manifestations, in the formation of the *Environmental Design Research Association* (EDRA) founded in 1968[4]. In the 1970s, environmentalism started to shift towards an ecological ideology soon dominated by technical solutions [3]. This coincided with the energy crisis and so environmental design soon shifted from a holistic approach to the search for new methods that would help designers reduce energy used in all phases of their designs. This technological turn was driven by highly structured principles, many of which were in the search for ever-more efficiency [4].

[4] http://www.edra.org/content/history

At the turn of this century, the technological emphasis for efficiency systematically developed throughout the 1980s and 1990s, started to reveal its limitations [5]. The limitations faced by the emerging methods and tools developed specifically at the time to address both global and local environmental degradation can be categorized in three general areas. *First*, the prescriptive or normative nature of the tools being developed left little room for profound exploration in innovative solutions. We have seen in our previous researchers on large-scale sustainable projects, that it is the tried and tested proposals that go ahead rather than the experimental. *Second*, their predisposition to fragment the given problem through very rigorous and numerous analyses tools for the various portions of the project, resulted in very little or no thought given to the encompassing situation. This disconnectedness between the analyses of the many parts and the whole project was problematic especially in terms of synergies and of coherence. *Third*, the profound problems facing humanity at the time could not be solved through technology alone, since questions of the social or cultural conditions could no longer be ignored.

Facing a problematic integration of both social and cultural dimensions, this approach revealed a contradictory opposition between form and meaning, between aesthetics and ethics, between process and content [6]. Numerous scholars now underline that these missing inter-subjective dimensions may be compromising the very idea of a holistic environmentalism in various realms of knowledge and action [7]. Such is the case in the design disciplines, where a series of paradoxes are being identified at varying scales. We focus on three paradoxes related to how design today deals with environmental degradation and climate change mitigation. These three paradoxes are:

a. human behaviour is hardly considered in environmental evaluations yet behaviour is at the core of environmental degradation and specifically resource consumption [8];
b. predicted performance measurements of design projects rely on managerial and eco-deterministic approaches, yet there is a large gap between these promises based on best case scenarios and actual performance [9]; and
c. representations of 'green' design are often added to spaces or buildings to communicate the 'greenness' of these projects rather than integrating actual effective environmental processes or characteristics not necessarily visible to the general user if these spaces or buildings [10].

An example demonstrating the first paradox is when smart buildings are adopted as a way to design energy efficient buildings [11]. The 'intelligence' designed into the buildings is often quite disconnected from actual human behaviour, to such a point that energy promises at the design phase, are rarely met at the post-occupancy phase.

An example demonstrating the third paradox is that it is commonly observed that some uses of solar panels have more to do with communicating (green) than actually reducing environmental impacts. This phenomenon has been observed in

contemporary Canadian public spaces, where there is evidence that designers tend to bypass the race for efficiency through strategies of communication [12].

It has now become critical to better understand how the dominant doctrines of managerialism, environmental efficiency, eco-determinism, among others, as systematic approaches, are resulting in a series of contradictions and 'demonstrative devices' which influence collective intelligence while deceiving the public that real action has been taken [13].

Today the question of climate change and its projected catastrophic impacts worldwide requires a rethinking of some of the predominant international discourses and approaches, so that human behaviour and collective intelligence regarding issues of climate change becomes a priority rather than a residual thought. Our hypothesis states that the critical and reflective design of art-architecture installations for the public space can address collective intelligence for the longer-term by helping to shift human behaviour. The *CoLLaboratoire* research project is focused on this approach.

## 3. INAUGURAL DESIGN CHALLENGE OF COLLABORATOIRE

For the inaugural experimental design challenge, *CoLLaboratoire* organized a design competition open to only young designers, artists, architects, creative or critical thinkers, and therefore preferably students. We heavily targeted our own students at Concordia University since the site of first design challenge was the Concordia University Loyola campus. The challenge called for an augmented bus shelter that students can use during the week as a *bus shelter*, but would have an augmented program during evenings, weekends and especially the summer. Solar energy was to be used in the project in creative ways, for collecting, storing, using, as well as displaying a variety of metrics to users of the shelter. The projects were expected to consider the role of public art and design in increasing awareness of, and engagement in, issues around climate change at the local level.

This competition was anonymously judged. The jury was made up of an art historian, a gallery director, an expert in solar energy, two architects, an interdisciplinary designer, and a doctorate candidate in sustainable business practices comprised the jury. A public vote was also included in this challenge as a way to get the members of the community involved in the conversation.

The main criteria for the challenge was the following:

- Imaginative shelter design (form, materiality, spatial qualities, etc.);
- Innovative interpretation of the idea of 'shelter' for the Loyola campus site;
- Incorporate solar energy and provide details of its use;
- Consideration on how the impact of your project might be measured over time (eg.: the number of mobile devices being charged per day using the solar power).
- The maximum allowable budget for the project build-out is $23,000.

Anonymity was ensured since all young contributors to the challenge had to preregister and obtain a code to include on their design panels. Because of the requirement of solar energy and the creative interpretation of the shelter, multi-disciplinary teams were highly encouraged.

### 3.1. Results from design challenge

This first design challenge was launched on April 2016. In this challenge, which was geared towards young designers only, we received 26 design proposals from Brazil, Canada, France, Iran, and USA. Three proposals were selected as originally announced, but the jury decided to add two honourable mentions. We present a short description of the awarded projects.

The first prize went to a project that displayed a bold architectural proposition, with an elaborate, yet clear reinterpretation of the 'bus shelter'. The solar panels could be integrated into the floating canopy, which glows at night. The proposal collects energy in order to create a night-time beacon, providing a feeling of security for users of the shelter over the darker months of the school year.

The second prize also proposed a poetic gesture for the site, alluding to a lighthouse in its design. The proposal, which included the addition of a subtle installation for social gathering adjacent to the original, refurbished shelter had great symbolic potential as a landmark.

The third prize was innovative in form and composition and extended the program of the bus shelter by proposing a structure that might also be useful as a weekend market. The proposal stood out for its distinctive, flexible form.

The two honourable mentions were selected for their pragmatic approaches. One of these doubled the capacity of the shelter, thus allowing for an extended interior program, such as the inclusion of a sharing library within the shelter. The second designed a series of modular shelters that can be combined in a variety of permutations to increase the capacity of the shelter while revealing perhaps too directly the solar technology.

With the winning project selected, a supervised design process is now ongoing. The winning team is currently collaborating directly with research groups, researchers and students from Concordia University, as well as other professional bodies in order to construct the project for the summer of 2017 on the Loyola Campus of Concordia University. The construction of the winning project is expected to begin by in early spring of 2017 for a completion date by August 2017. The launch of the constructed project will be done concurrently with the 375th Montreal celebrations in 2017.

## 4. DISCUSSION OF RESULTS OF CHALLENGE

With 26 projects submitted to this design challenge, the diversity was high and therefore the selection of the winning project was difficult since the criteria had to be reinterpreted for each special case. The projects can be categorized into a series of polarities, which ranged from:

a. projects that chose to focus on symbolic gestures to those that were completely pragmatic in their approaches;
b. easily buildable projects to overly complicated parametric designs - let's keep in mind that the competition was for a bus shelter;
c. the visible exhibition of solar panels on elementary architectural forms to the elegant use of new solar technologies inconspicuously concealed in clean forms;
d. projects that focused on sites and their spatial compositions to projects that focused on the composition of the artefact (bus shelter) alone.

The winning project provided a symbolic gesture, that is buildable, with solar panels obscured in the materiality of the canopy, focusing on the spatial qualities of the site while also the designing an artefact that can act as a beacon for the entrance of the university. It also proposed a playful and theatrical lighting approach for displaying the level of energy stored, used and left in the shelter.

The theatricality of this gesture for displaying such dry information allows reaching a broader spectrum of users of differing ages, backgrounds, etc. The designers provide a shelter that is didactic and interactive, informing the user of the energy saved from the grid. As the user activates the elements that use the stored solar heat, they will immediately see the indicators of stored solar energy decrease. This playful gesture is meant to communicate to the users, or the passer-by as to the solar energy that is being collected, stored, and used on a daily basis for cooling, heating or charging portable devices.

Furthermore, the clever manner in which the solar panels (harsh engineered components) are concealed in the canopy of the shelter presents two key outcomes: (1) the clean integration of effective environmental processes is possible; and (2) the expression of 'sustainability' or 'green design' does not equal green design, since the winning design is not embellished with demonstrative environmental gadgets.

The winning project addresses the main goal of *CoLLaboratoire*, which is to recover memories of place and environment and to serve as a model project of a sustainable city.

## 5. CONCLUSION

This first inaugural project for *CoLLaboratoire* helped reflect on how architecture and more broadly, spatial practices, through its autonomous structures, formal procedures and even representational approaches, enables designers to expand out towards other discourses such as virtual technologies, sustainability, spatial practices, in order to address pressing questions of today, such as climate change issues. This project allows architects to bridge the gap between different modes of knowledge, and this is especially evident in practices of sustainable architecture. This project is also key in highlighting its contribution to the expansion of today's architectural interdisciplinary practices.

This community-academic experimentation through public art-architecture installations, helped in finding unconventional ways to allow designers and community to better reflect on questions of climate change. Such a project may also bring to light some of the contradictions of the prominent practices of what is termed 'sustainable' design today - but this is only observable once the installation is adopted and used by the community over the course of the next few years. So such

a project is not only a cultural production for the community, it also is a living lab, a dissemination project of innovative technologies and uses of technologies. Such a critical practice is key to help bridge the gap of collective intelligence so deeply needed for moving towards sustainable cities.

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