Architecture and Public Spaces as Hinges between Environmental Knowledge and Action for Sustainable Urban Living

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True North Science Boot Camp 2018, Concordia University, May 23-25

ideasbe Concordia University Research Chair
Integrated Design Ecology and Sustainability for the Built Environment

Research program

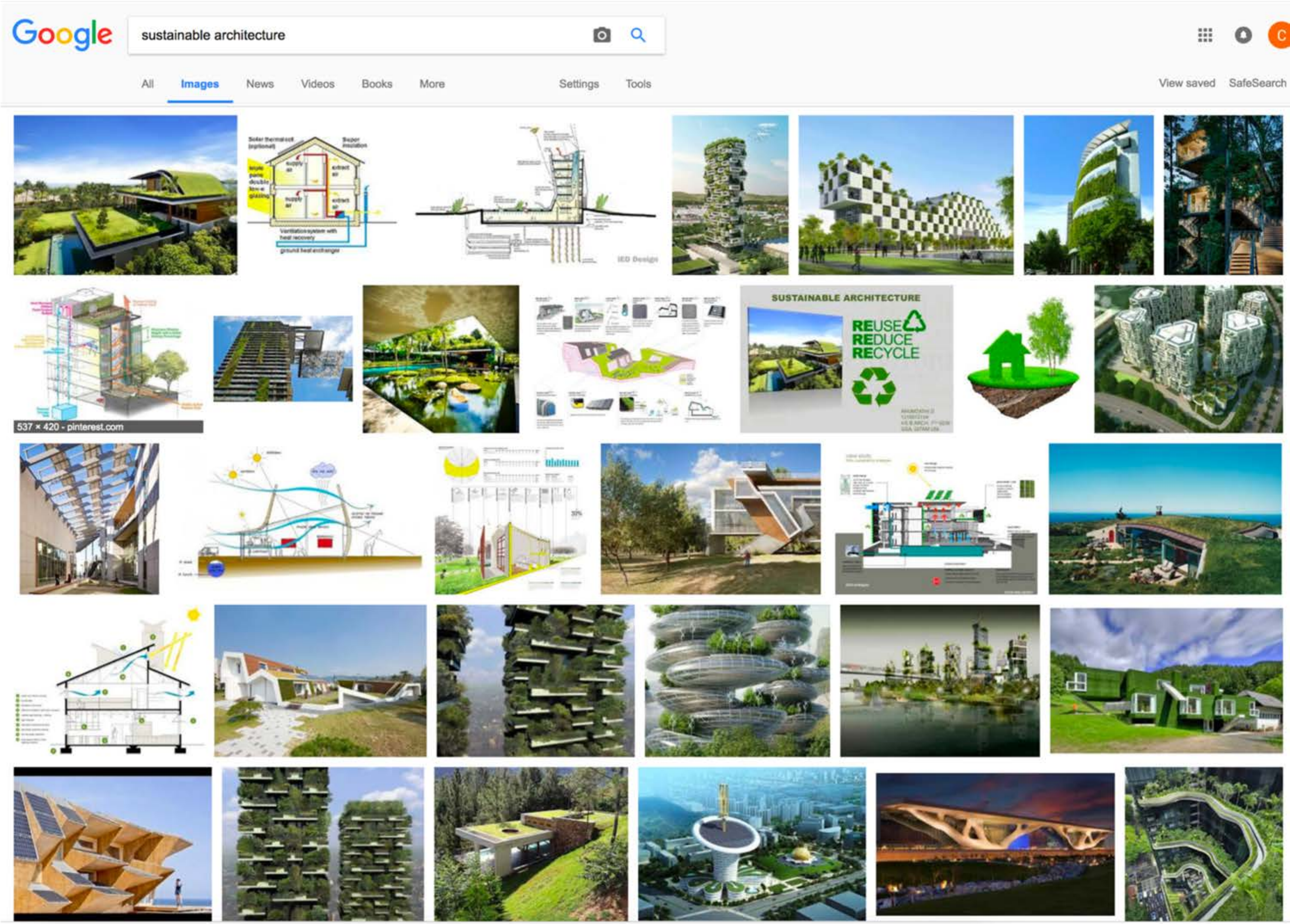
The vastness of research questions in a discipline as complex as sustainable design spans from:

- questions on **environmental optimization** to
- questions on **conception methods** to
- questions of **reception** and to
- questions of **critique of projects and practice**

IDEAS-BE research program:

- Spans from **empirical** research on ecological design projects and practices to running a **series of experiments in the city** as **points of conversations** with the community

How much does sustainable architecture rely on *rhetorical tropes* today?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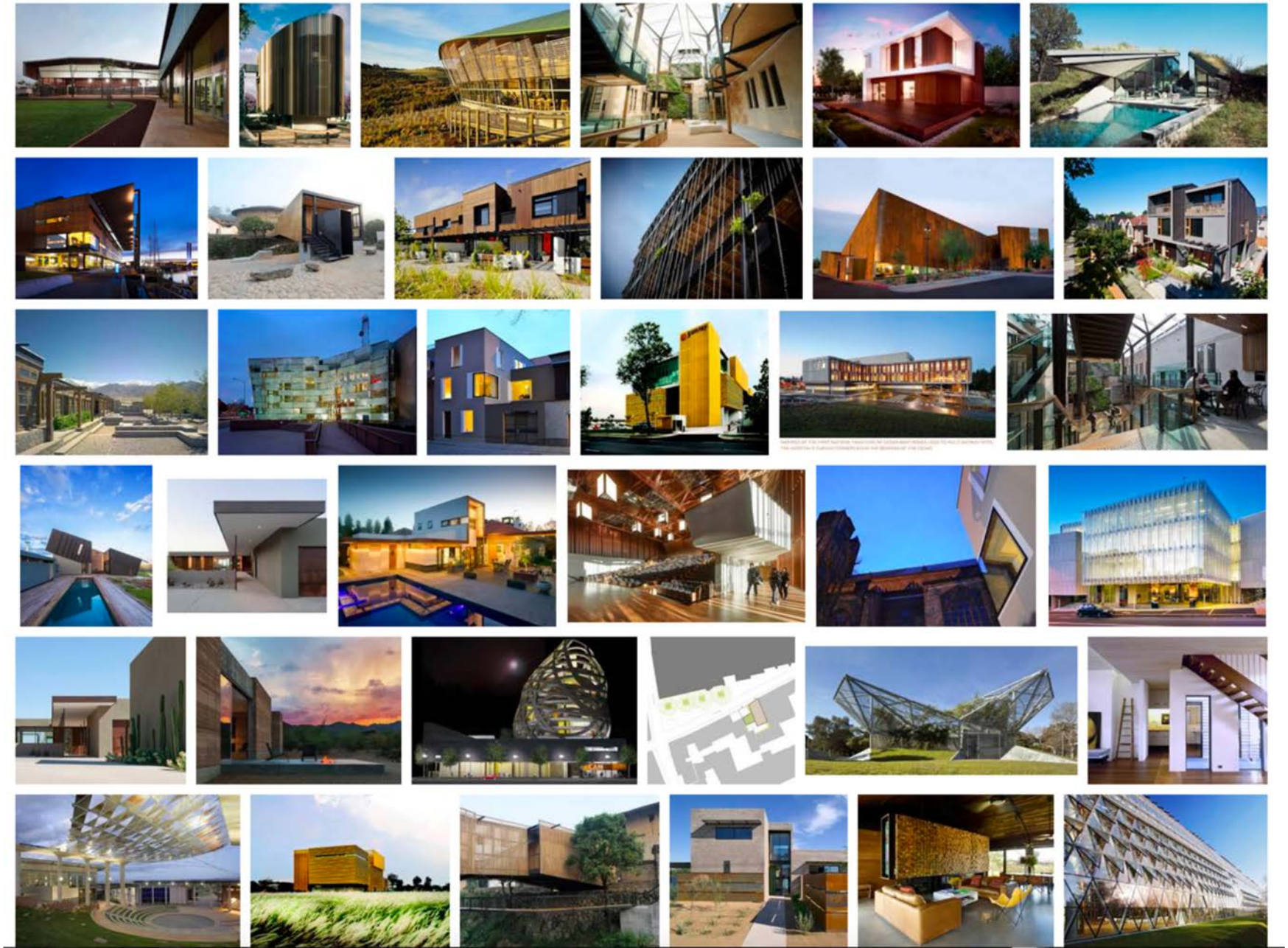


the ‘drift’: performance or *communication* of performance?

Is the new doctrine of ‘*form follows performance*’ emerging more as a communicative vehicle rather than as a response to our contemporary unsustainability crisis?

The pervasiveness of environmental optimization methods based on eco-performance are emerging as a phenomenon in the design disciplines.

Leading to three areas of critical interrogation:

Does an environmental ethic equal living in a tropical forest?

1

Projects that appear to be sustainable but do not provide any benefit are inherently counterproductive since there is a false perception of responsibility taken.

Although green roofs and walls help mitigate heat island effects, their application must be carefully considered given climatic conditions – it is not one size fits all, especially in Nordic countries.

Are environmental certifications « the new design prize of excellence » ?

2

Is it still possible to critique design qualities such as form, light, space, function, composition, materiality, tactility, experience, flow, etc. – when it is the level of environmental certification that tends to replace the judgment of excellence in the design for public buildings?

DGNB®
Deutsche Gesellschaft für Nachhaltiges Bauen e.V.
German Sustainable Building Council

MINERGIE®

Do we need a LEED certified suburban parking garage?

3

The disconnectedness between the analyses of the many parts and the whole presents challenges for synergies and coherence, since little reflection is given to the encompassing situation of the project.

Benefits of environmental tools/certifications

(1) They **simplify** a very complex problem into a manageable set of criteria;

(2) They help **reduce potential environmental impacts;**

(3) They **increase the economic value** of buildings;

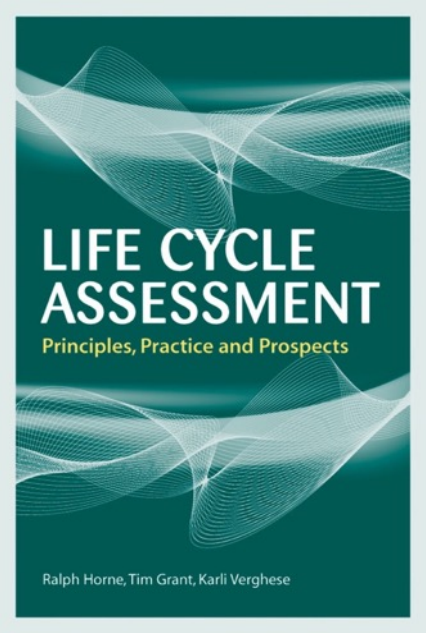
(4) They give the **perception of a certainty of 'greenness'**.

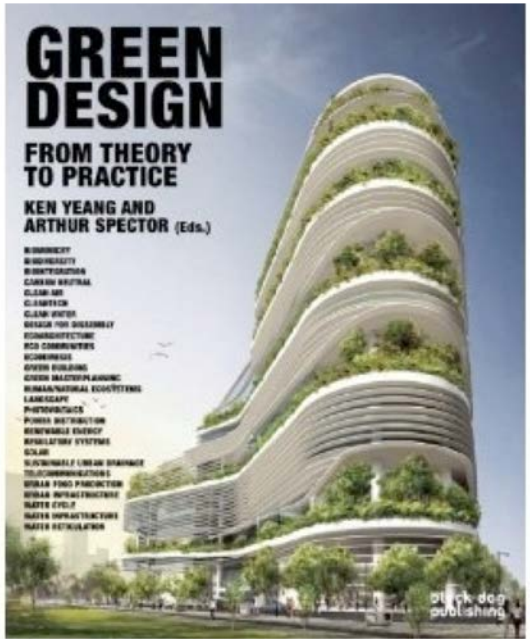
Objective of research program:

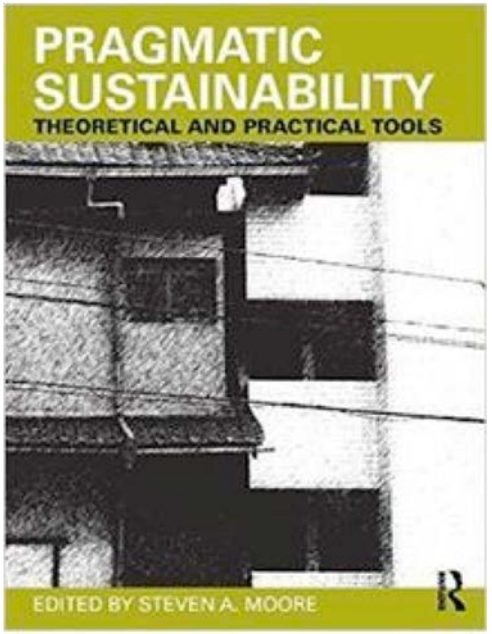
We aim to better understand how the use of environmental tools/guidelines/grids/certifications have impacted contemporary architectural practice and the overall quality of the built environment.

Have these tools helped bridge (or enlarge) the gap between culture and nature for our built environment?

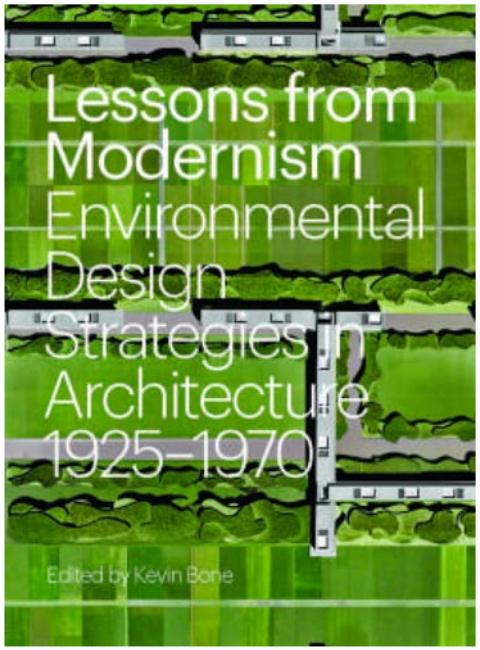
…highlighting literature that builds on dominant methods

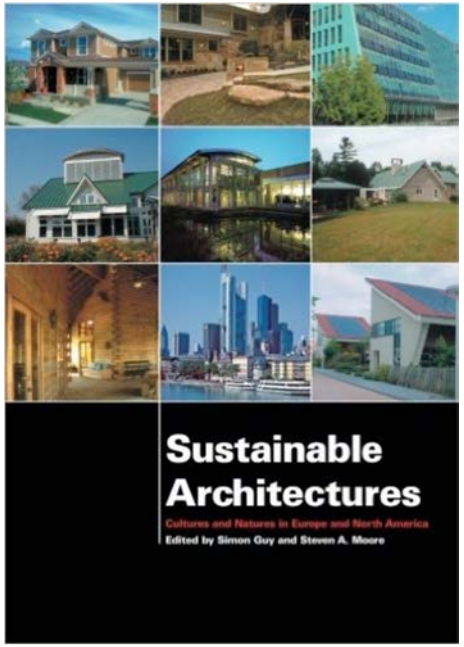


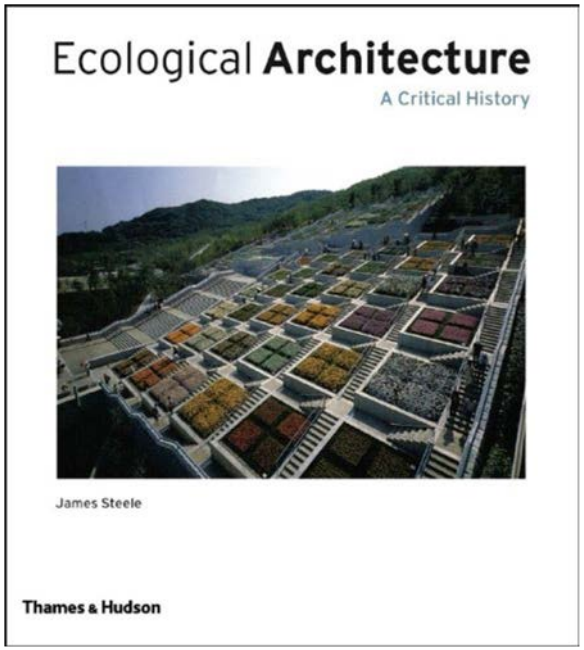


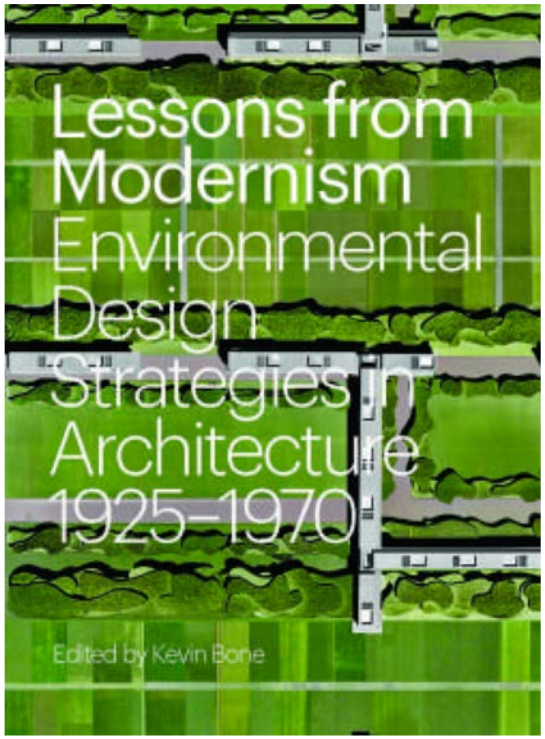


…highlighting literature that challenges the status quo







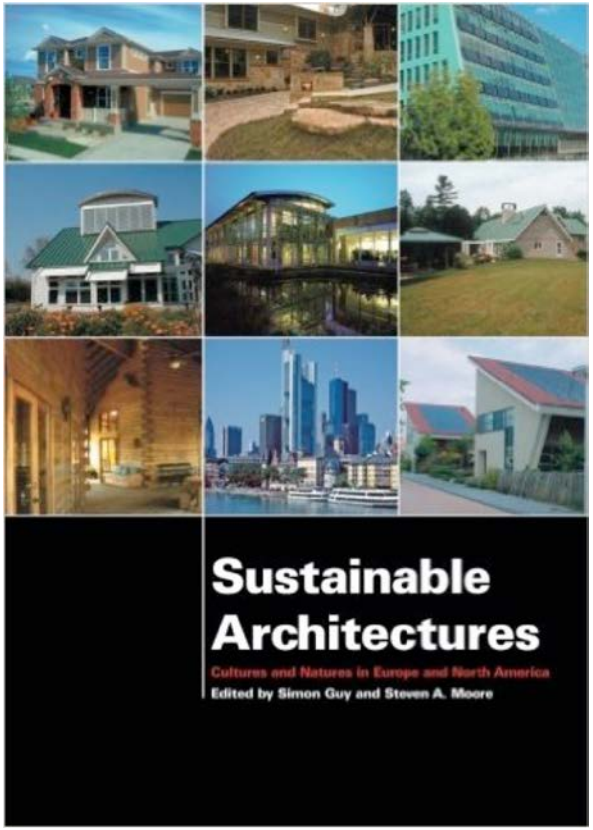


This book examines 25 projects between 1925-1970.

It highlights how each of these architectural projects incorporate environmental strategies by considering site, program, social and cultural context, use, while meticulously adapting these to natural forces (climate and geography).

These considerations were not done in a way that certifications would approve, yet embrace key environmental architectural sensibilities.

Kevin Bone (editor), 2014



Knowing how to build more technically efficient or ecologically responsible buildings and being able to assemble the social resources to do so, requires different forms of knowledge and practice.

There is wide contestation over the optimal pathways to greener building design and great diversity in practices of sustainable architecture.

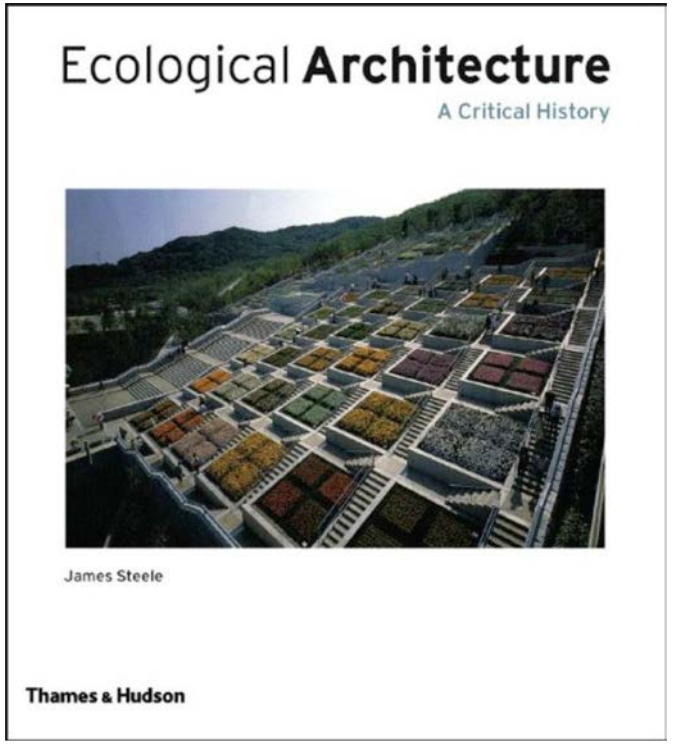
Simon Guy and Steven A. Moore (eds.), 2005

Steele examines 25 projects from 1902-2004.

The ‘green’ movement that started in the mid-1980s produced the most significant paradigm shift in terms of how we design for/with/through the environment.

The increasing technological and decreasing social approach to ecological architecture highlights this shift.

James Steele, 2005

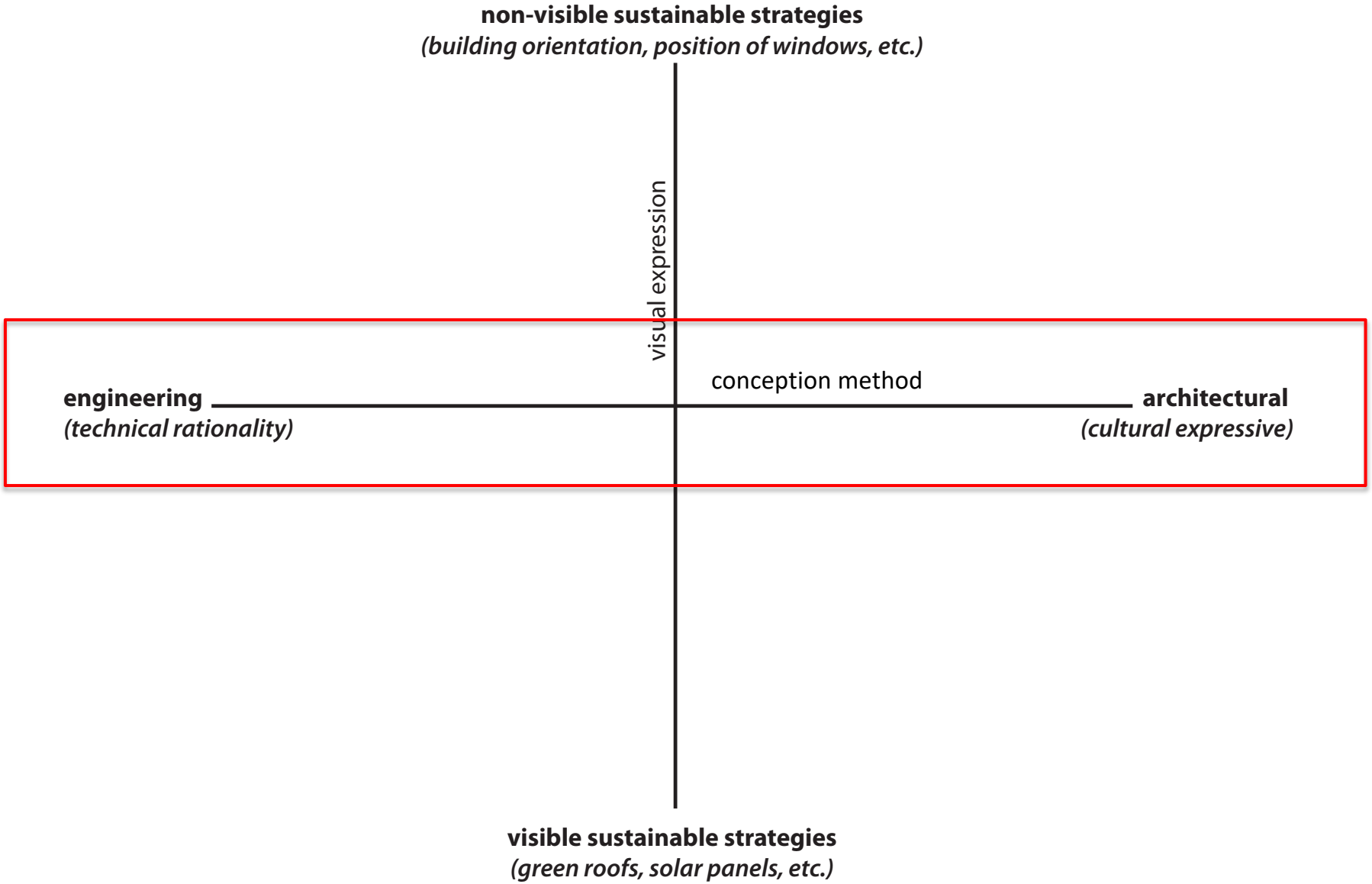


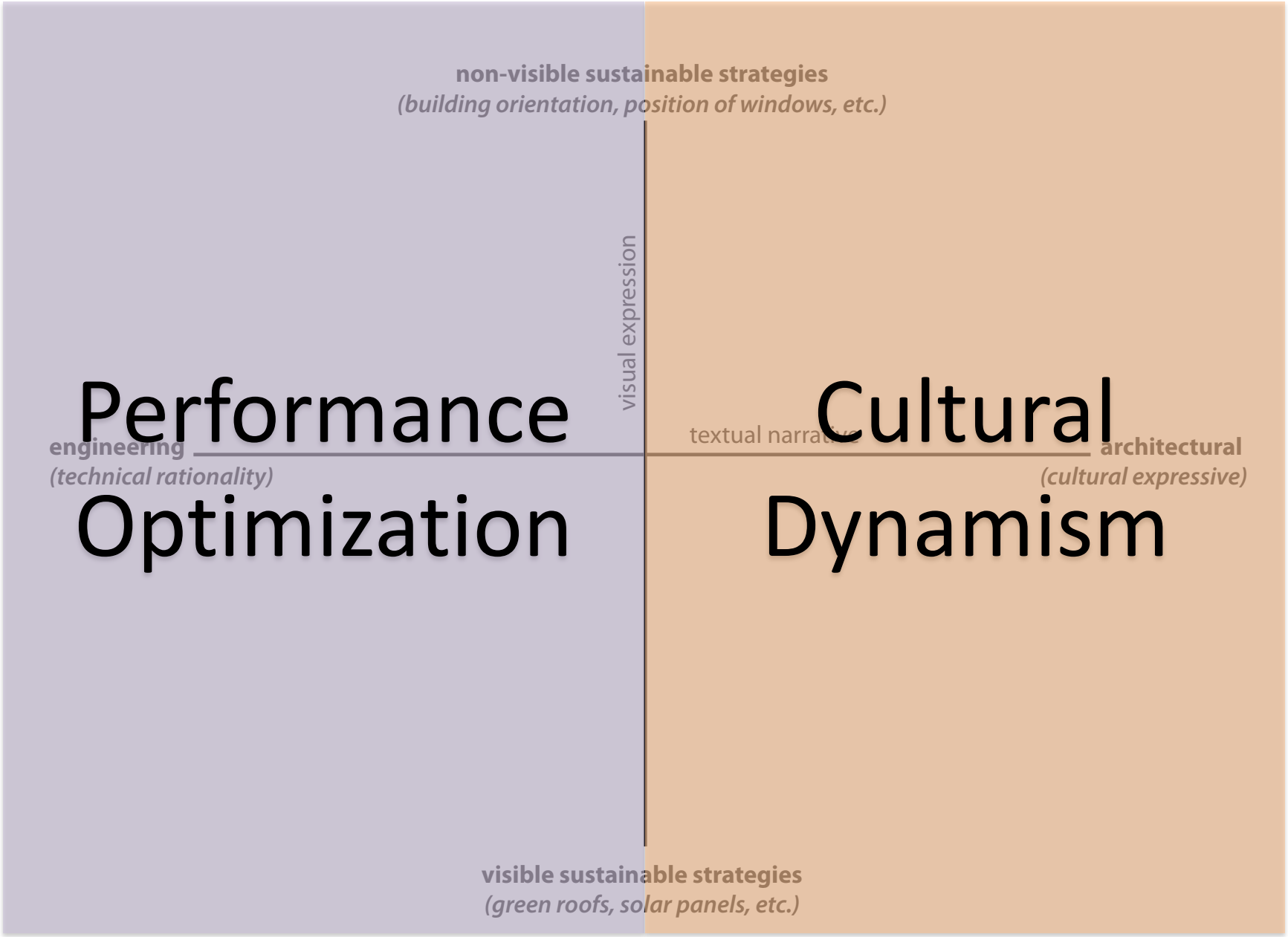
Hypothesis:

The application of the principles of eco-efficiency as a systematic strategy for sustainable design may result in nothing more than a series of green clichés or new “demonstrative devices”, used to communicate greenness, and this is having an impact on the form of the city.

In a preliminary research, a method to reveal if green clichés were adopted:

- Analyzed 12 winning architectural projects from design competitions
- Projects spanned from 1992-2014
- All with a focus on environmental design
- Since 2003 (majority of design competitions strictly required environmental certifications)


non-visible sustainable strategies
(building orientation, position of windows, etc.)
visual expression
conception method
engineering
(technical rationality)
architectural
(cultural expressive)
visible sustainable strategies
(green roofs, solar panels, etc.)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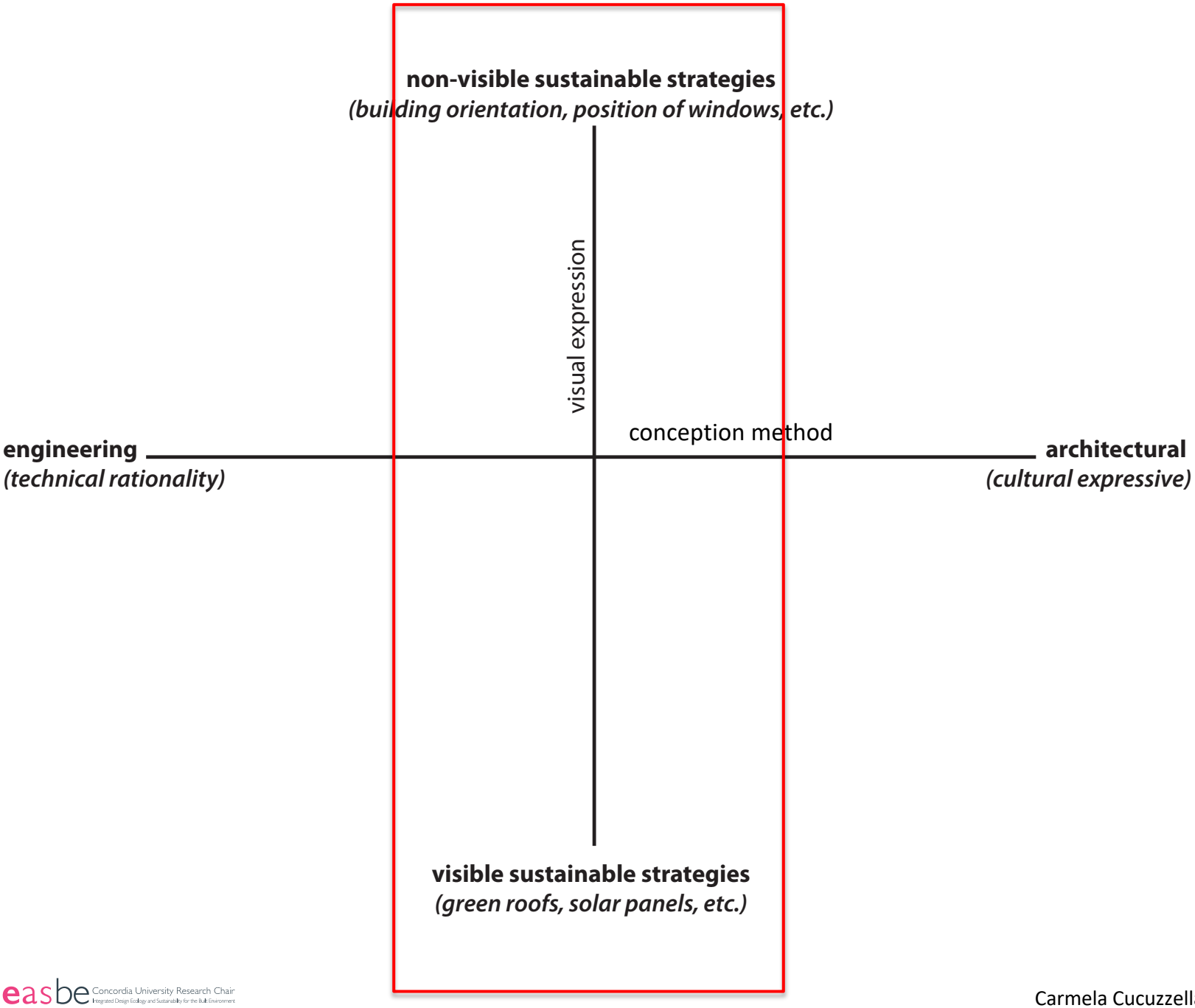
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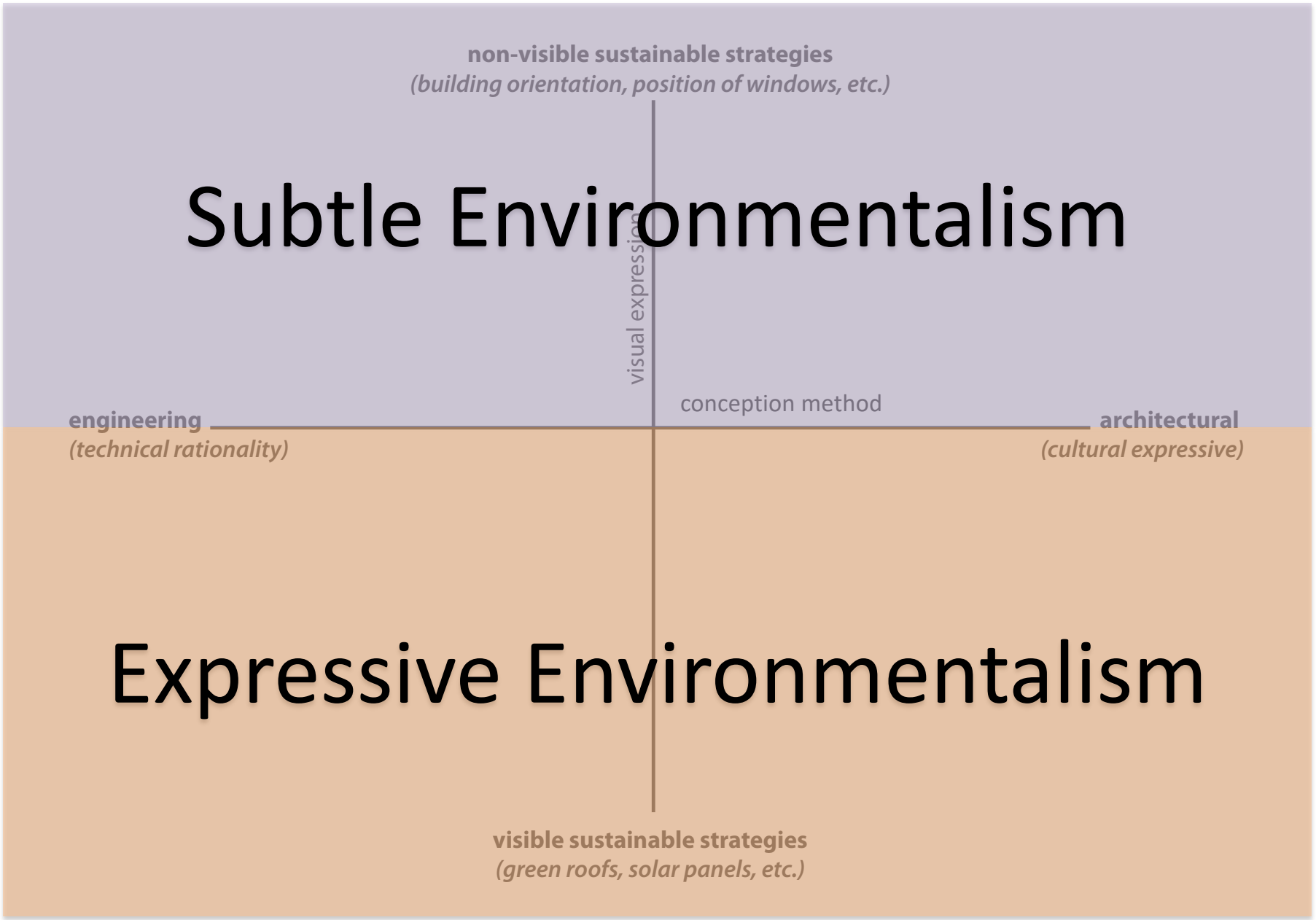
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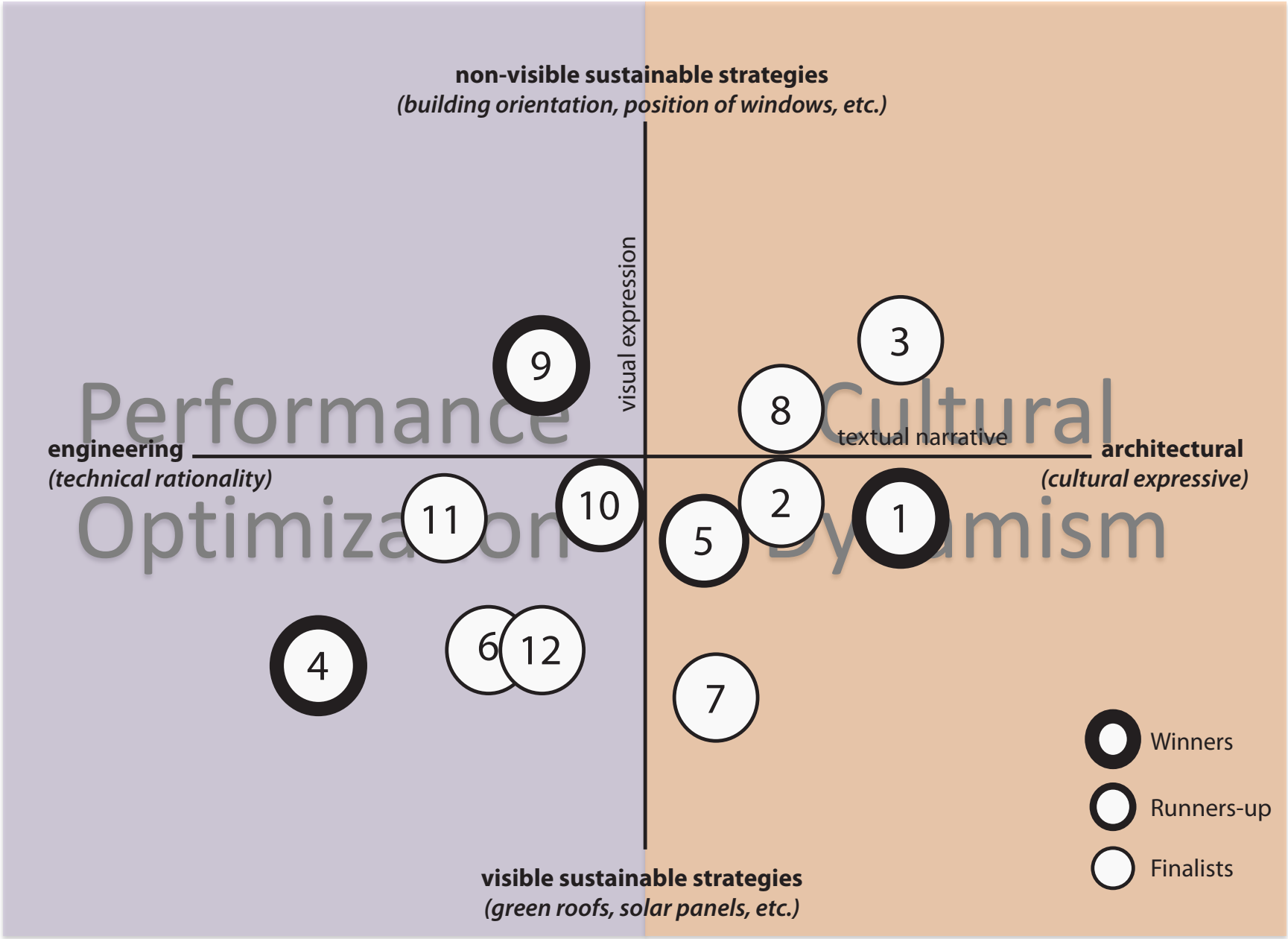
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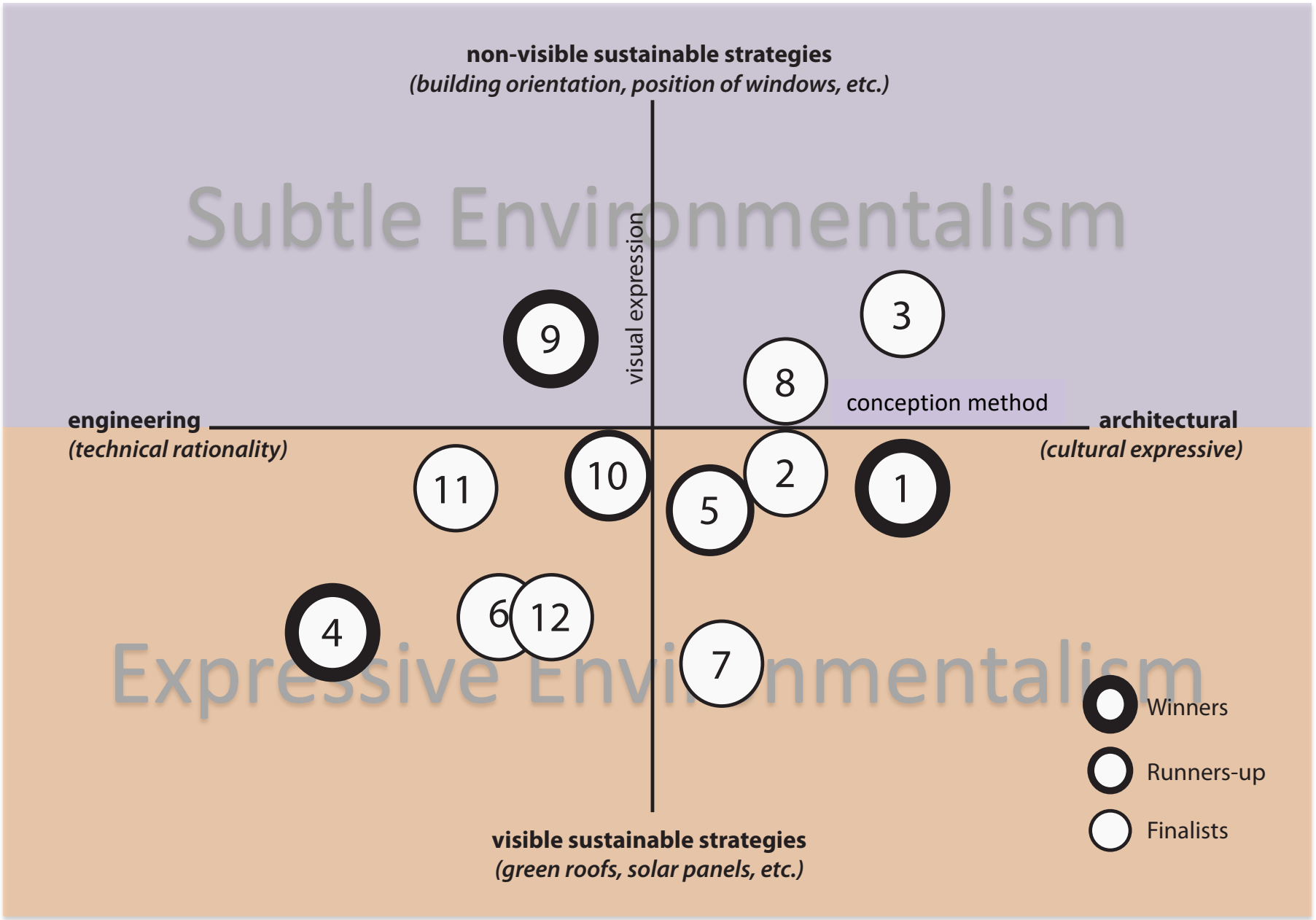
Winners
Runners-up
Finalists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Questions related to the reconciliation of **nature and culture** have historically been at the **core of architectural practice** – significantly before the term ‘sustainable development’ was internationally agreed upon in the 1970s.

Yet today, paradoxically, these have come to be **increasingly separated** through **fragmented expert visions** of the built environment.

Architects/designers are caught between a will to protect the planet through

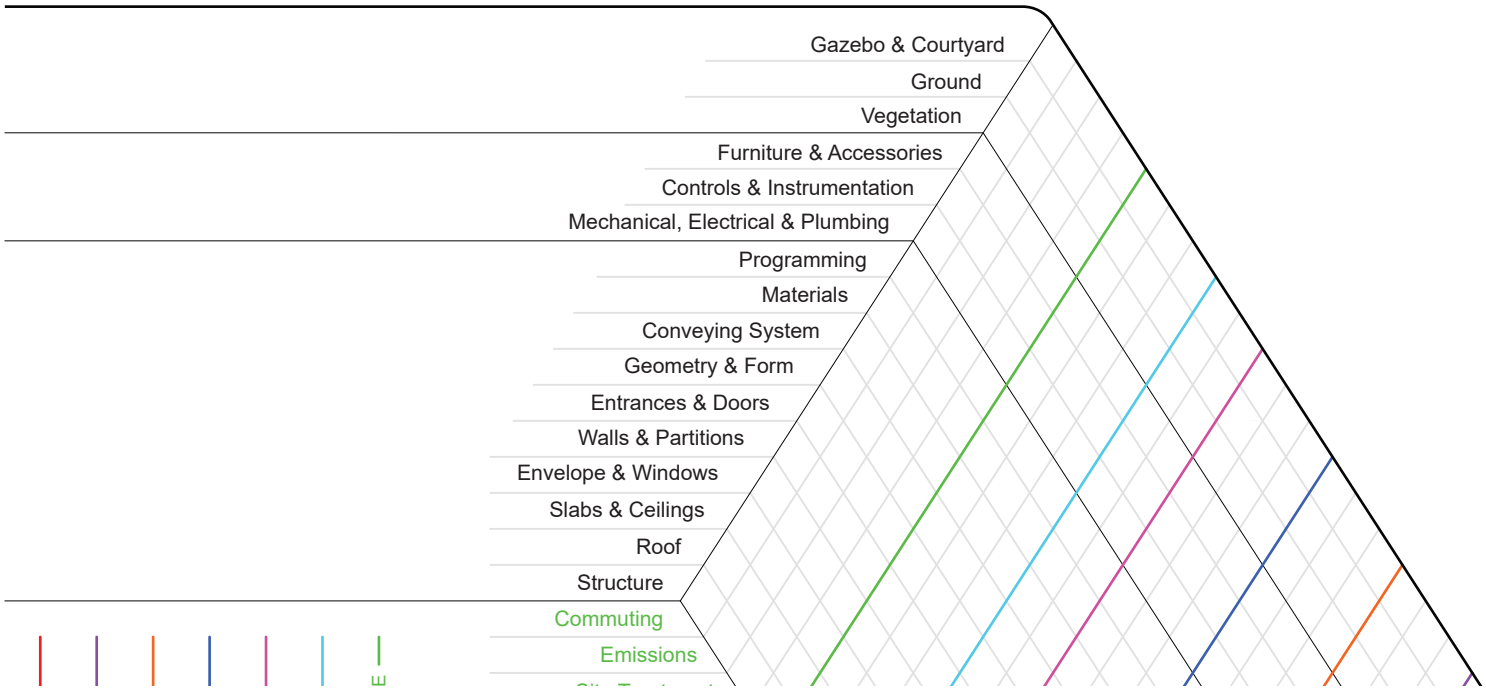
(1) environmental management tools which are prescriptive and imposed by the competition or public provisioning process; and

(2) their **expectations for innovation and overall excellence** on the question of reconciling nature-culture.

We examine how the practice of culture-nature reconciliation has manifested itself in contemporary architectural design practice.

And more specifically **a method that helps better understand how the architectural vision reconciles with the environmental strategies**.

Development of an analytical method that addresses a fundamental lack in current environmental evaluation tools by assessing the level of integration between green technologies and the overall architectural design qualities.



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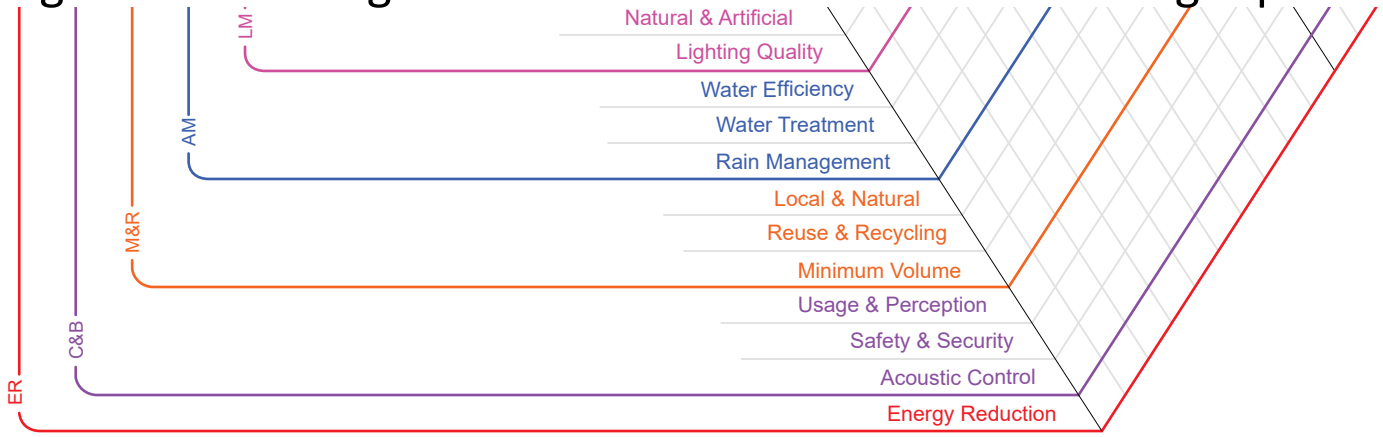
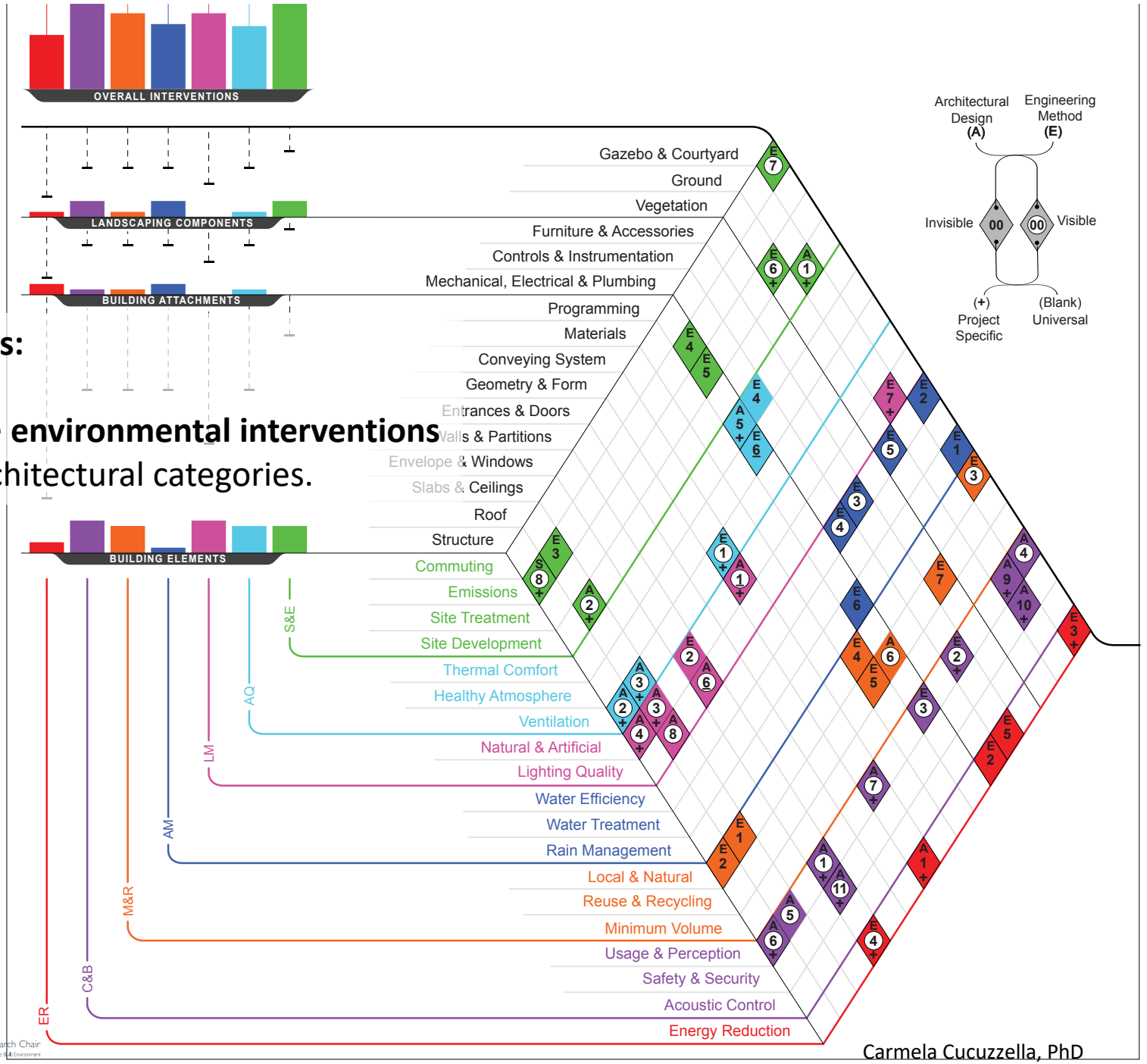
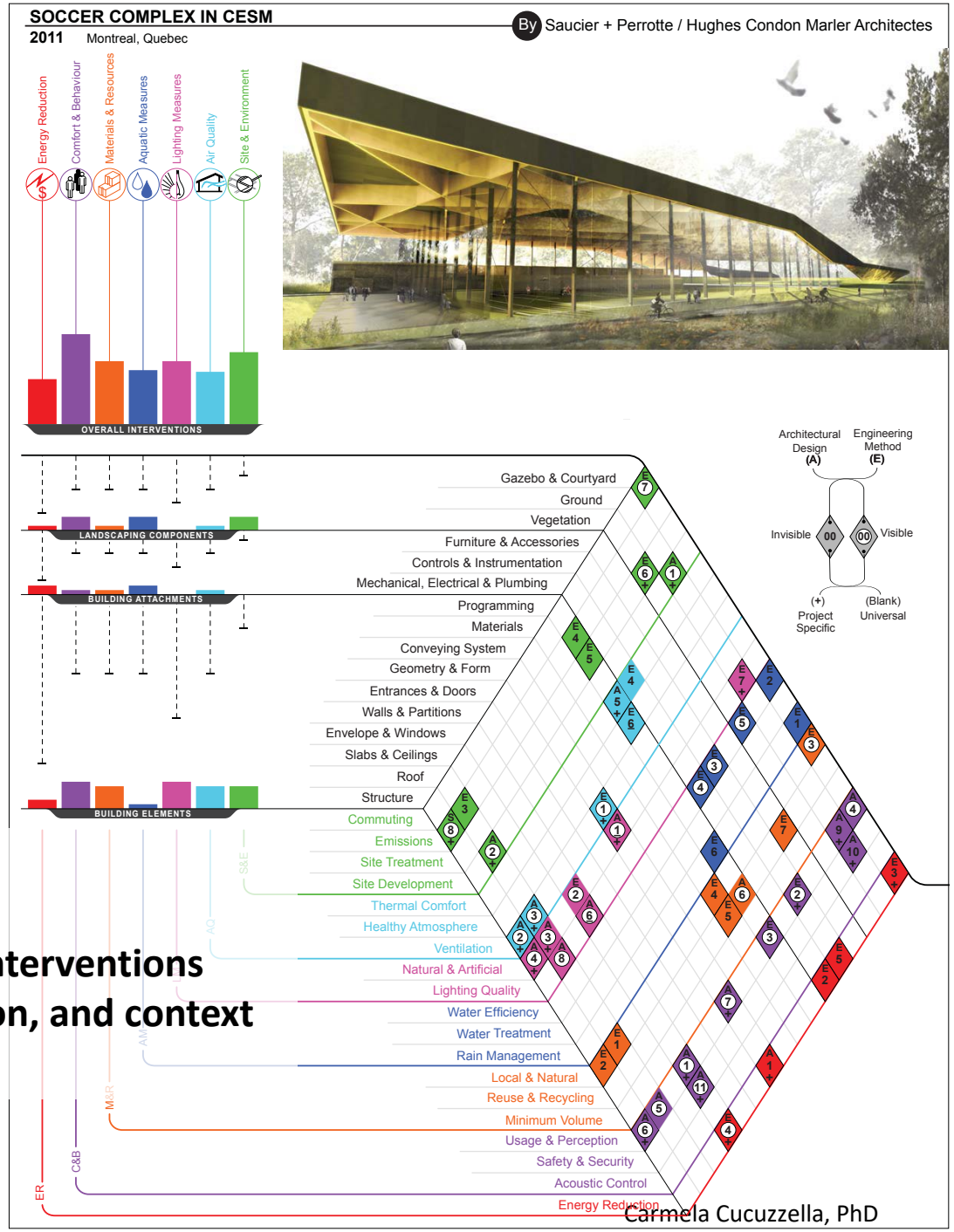


1st level of analysis:

Summation of the **environmental interventions** for each of the architectural categories.



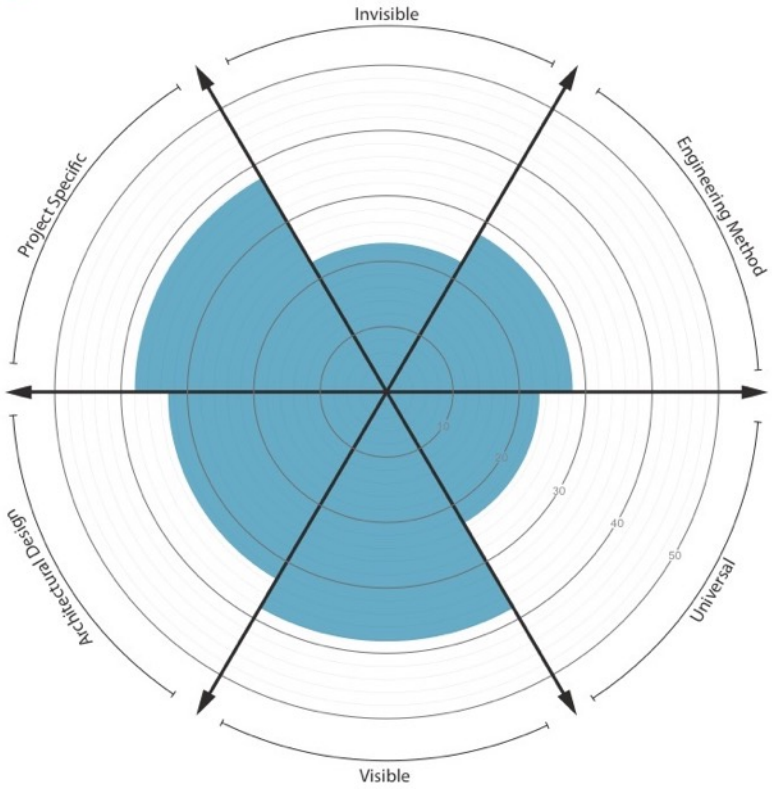
Carmela Cucuzzella, PhD



2nd level of analysis:

Categorization of **the environmental interventions** based on **design orientation, expression, and context specificity.**

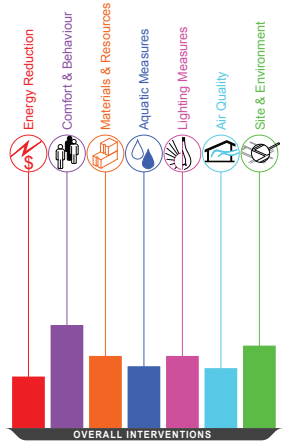
CESM | Saucier-Perrotte

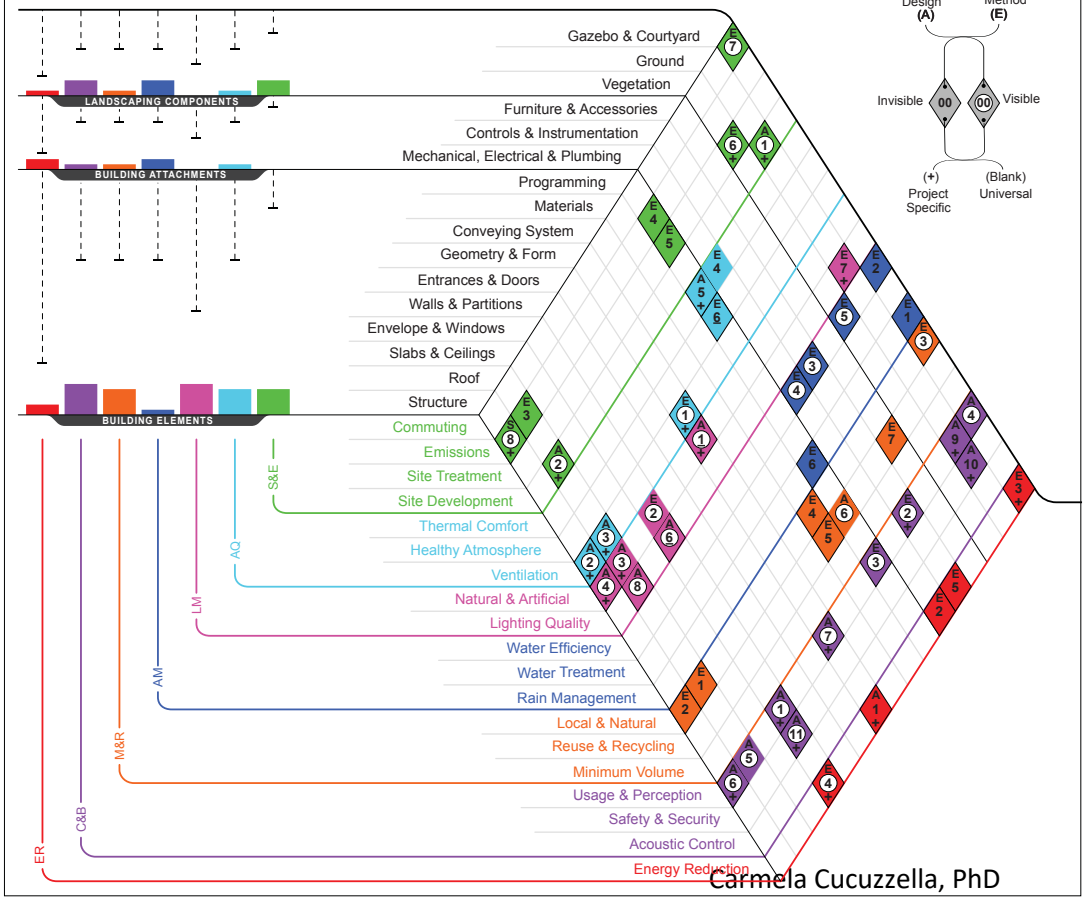


SOCCER COMPLEX IN CESM

2011 Montreal, Quebec

By Saucier + Perrotte / Hughes Condon Marler Architectes





Carmela Cucuzzella, PhD

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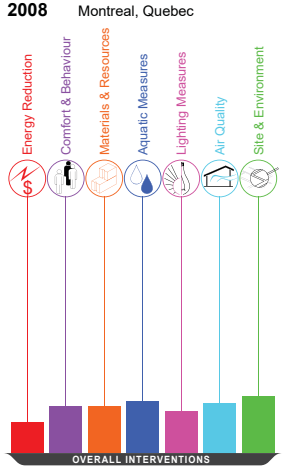
Planétarium | Cardin Ramirez

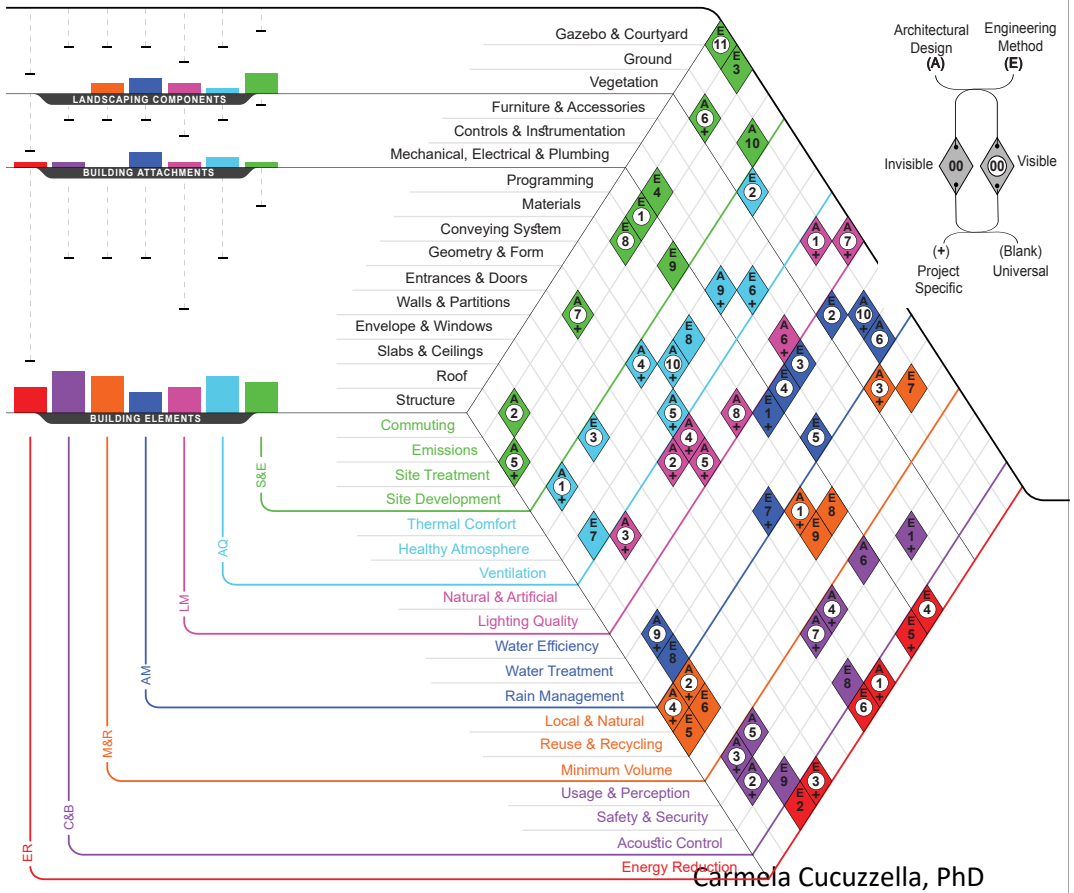
PLANETARIUM OF MONTREAL

2008 Montreal, Quebec

By Cardin Ramirez + Aedifica



Our proposal provides therefore a privileged contact with nature developed views on the sky, views on a new vegetation and views unveiled a new floor. It is important for us to link the experience of the sky to meet nature. Our proposal fits in humility in a particular environment and preserves the visual clearances necessary for the development of the existing architecture while adding to the value of the composition.



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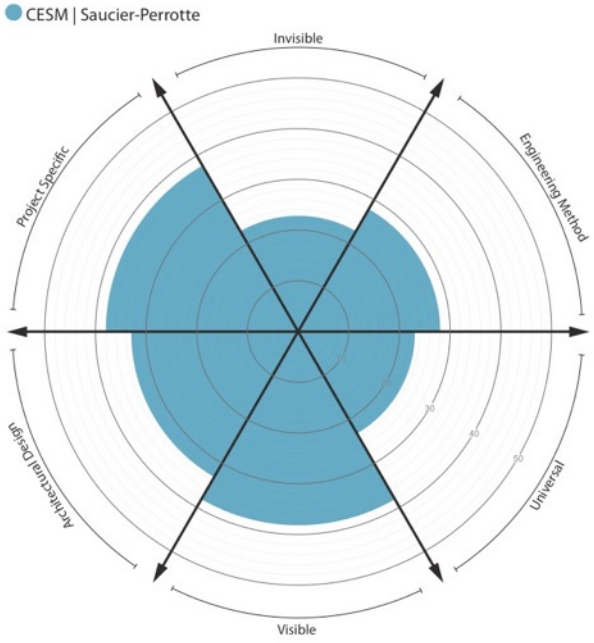
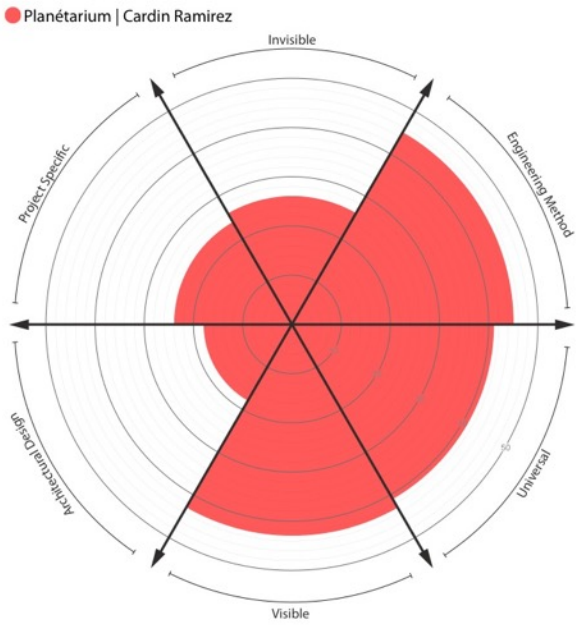




A method that allows us to empirically compare how deeply the **architectural vision reconciles with the environmental strategies.**

Carmela Cucuzzella, PhD

Yes, we need environmental certifications for design, but…

They cannot move us out of the complex spectrum of **problems of unsustainable human habits**.

We need to have a better grasp of environmentally responsible projects through:

- their social acceptability
- their cultural reception

An design research approach where **human behaviour and collective understanding** becomes a **priority**.

"We consider that in the face of mounting challenges such as population growth, urbanization, environmental degradation, disasters, climate change, increasing inequalities and persisting poverty, there is an urgent need for new approaches, to be defined and measured in a way which accounts for the broader picture of human progress and which emphasize harmony among peoples and between humans and nature, equity, dignity, well -being and sustainability."

The Hangzhou Declaration: Placing Culture at the Heart of Sustainable Development Policies (2013)

Carmela Cucuzzella, PhD

CoLLaboratoire

We argue that there is an urgent need to initiate innovative models for sustainable development based on collaborative design challenges while pushing the boundaries of design practice.

CoLLaboratoire is a platform for projects that adopts **art-design as critique and narrative** to contribute to todays' imperative questions with the community.

"Culture, but not just its aesthetic dimension, can make communities. It can be a critical focus for effective and sustainable urban regeneration. The task is to develop an understanding (including methods of study) of the ways – cultural and ethical – in which even the 'worst estates' can take part in and help shape the relics of their city (and society) as well as their locality. This is a massive challenge to academics, professionals, business, and to local and ultimately national government and – of course – citizens"

Catterall, B. 1998. *Culture as a Critical Focus for Effective Urban Regeneration*. Town & Country Planning Summer School, University of York, p.4

Our hypothesis states that the **critical and reflective art-design** installations for the public space can address **collective understanding for the longer-term** by helping to shift human behaviour.

The questions that are at the core of this research project are:

What type of public space installations can help heighten community awareness to issues, questions, or solutions to climate change?

How can the inclusion of the community contribute to a deeper embodiment of sustainable practices for the long term?

A research that joins community and academics from various disciplines to stimulate debate on the importance of public space for heightening awareness to climate change issues by mobilizing the creativity of students of the built environment.

This joint initiative aims to foster community knowledge through conversations with the focus on behavioral changes and on building new community models with regards to the challenges faced by climate change.

This project brings together technical innovation with social engagement and cultural stewardship.

CoLLaboratoire has adopted the **urban corridor of Sherbrooke Street**, which runs 31km east to west of Montreal, as an **organizing principle** for all urban installations.

Changing social, economic and political contexts along its length make this choice promising.

Each of the installations are **context sensitive**, taking into consideration the concerns of the community.

The **resulting narrative from the collection of installations along Sherbrooke Street** will be at once, educational, interactive and experiential, intended **to move, to awaken and to engage the users** and help them reflect on concerns, issues or solutions regarding climate change.

http://icewatchparis.com

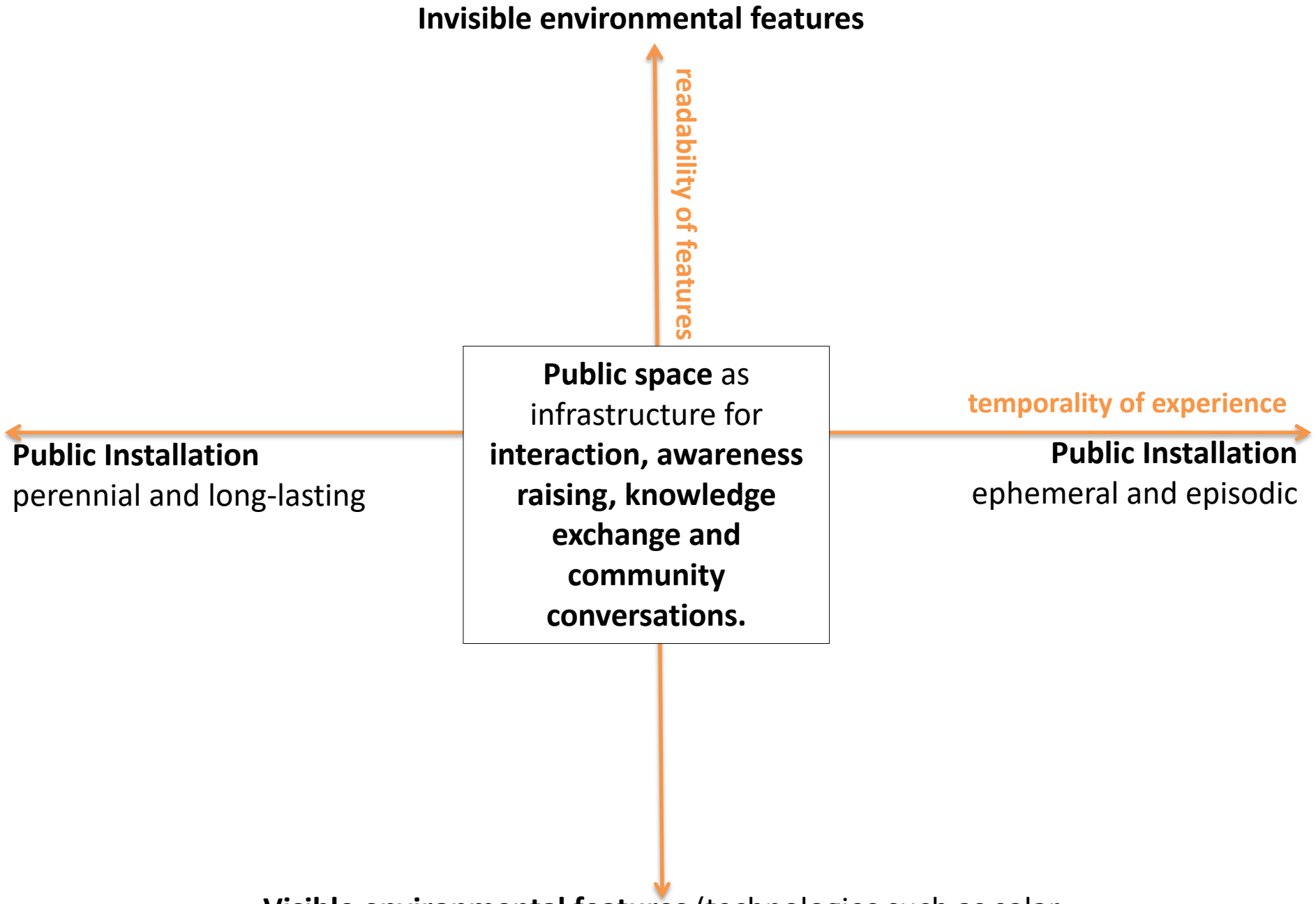
Art installation entitled Ice Watch, by Danish-Icelandic artist Olafur Eliasson, made with parts of Greenland's ice cap, on display in front of the Pantheon in Paris, during COP 21 (United Nations Conference on Climate Change), December 3-12 2015.

Photograph: Eric Feferberg/AFP/Getty Images

What are the different ways in which we can engage community conversations in public spaces?

What are the different ways in which we can engage community conversations in public spaces?

Public space as infrastructure for **interaction, awareness raising, knowledge exchange and community conversations.**


Invisible environmental features
readability of features
Public space as infrastructure for interaction, awareness raising, knowledge exchange and community conversations.
temporality of experience
Public Installation
perennial and long-lasting
Public Installation
ephemeral and episodic
Visible environmental features (technologies such as solar panels, green walls, green roof, double skin envelopes, etc.)

Invisible environmental features

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Public space as infrastructure for **interaction, awareness raising, knowledge exchange and community conversations.**

Public Installation
ephemeral and episodic

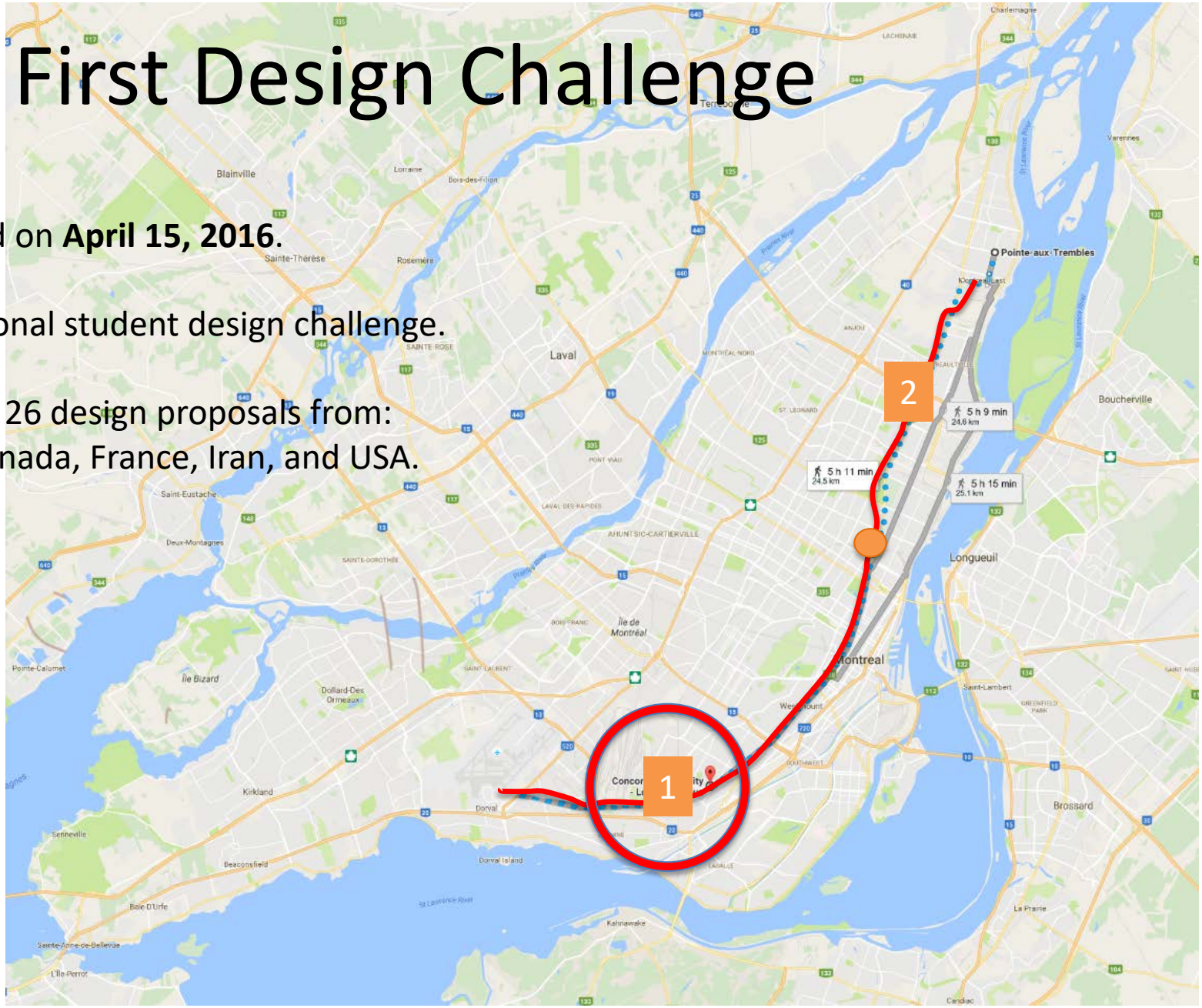
Visible environmental features (technologies such as solar panels, green walls, green roof, double skin envelopes, etc.)

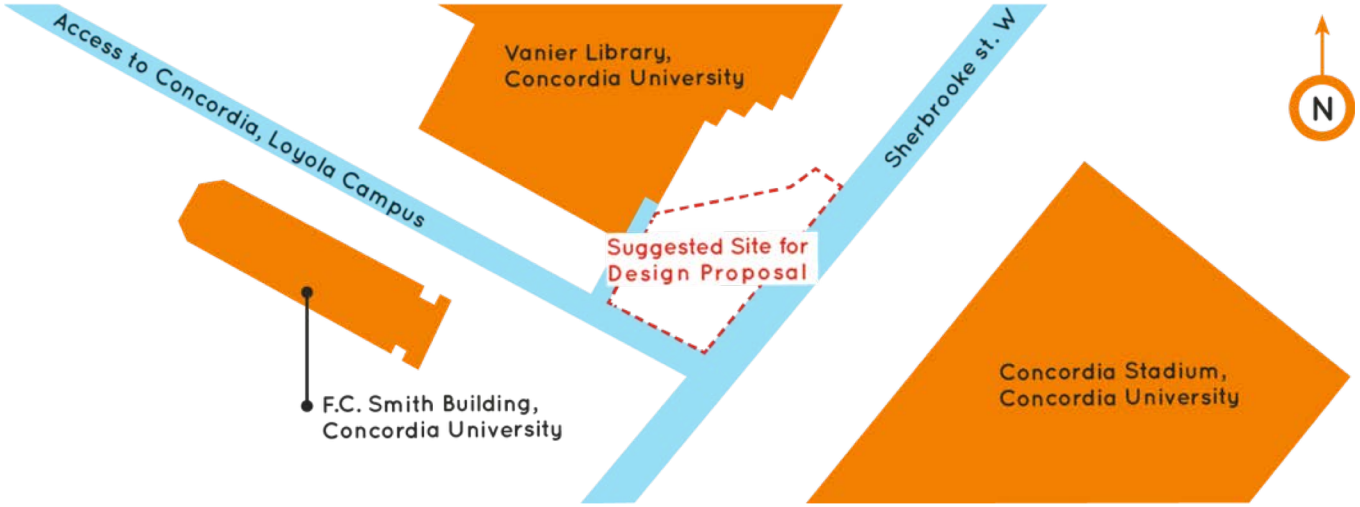
Our First Design Challenge

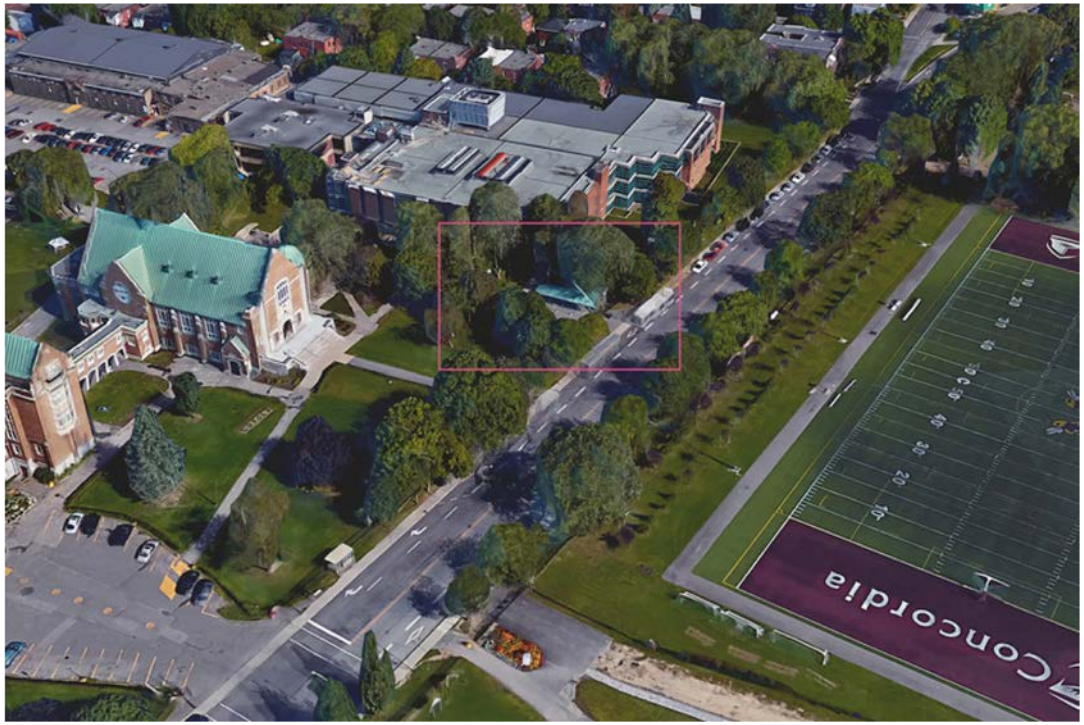
Launched on **April 15, 2016**.

International student design challenge.

Received 26 design proposals from:
Brazil, Canada, France, Iran, and USA.







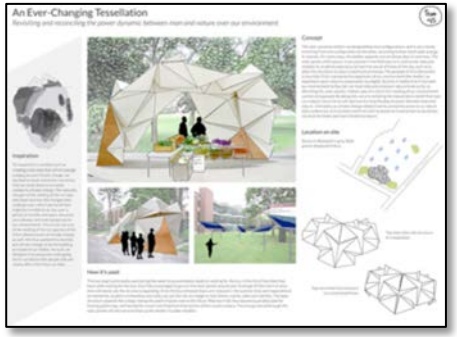
The first design challenge was on the Loyola Campus of Concordia University.

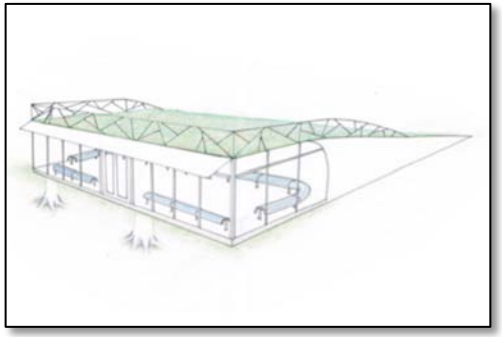
main criteria for challenge

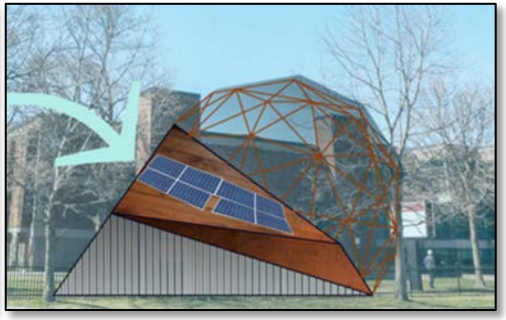
- challenge called for an **augmented bus shelter**: bus shelter during school hours, augmented program during off-peak hours.
- use of **solar energy in creative ways**: collecting, storing, using, and playfully displaying a variety of information.
- **consult the community** to help better understand context and needs.

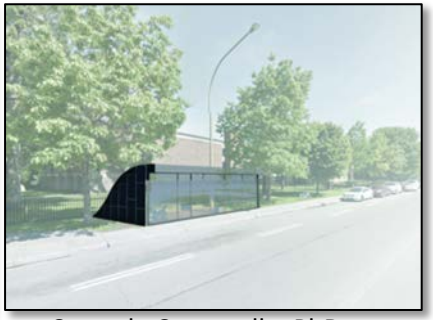

SS35
Équipe 35
Inspiré par la nature

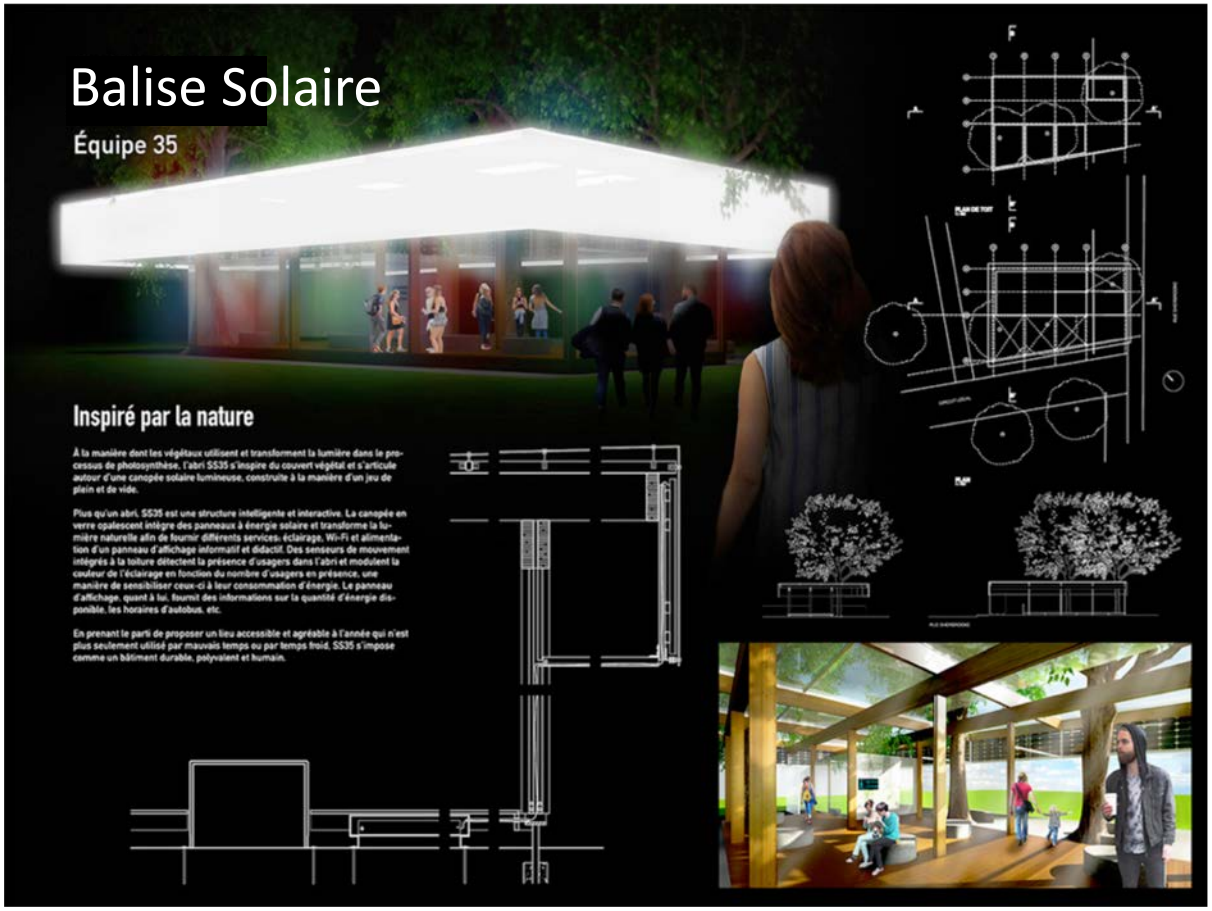

LIGHT HOUSE


An Ever-Changing Tessellation









1st Prize: Beacon 35

- symbolic (beacon)
- focused on place-form
- silent integration of technologies
- playful display of information to users
- floating beacon at night serves for safety
- responsible integration with existing trees

Olivier Guertin, Claude Amiot Bédard, Paul Desharnais, Julien Duchesne, Vincent Cloutier Laplante, Philippe Côté

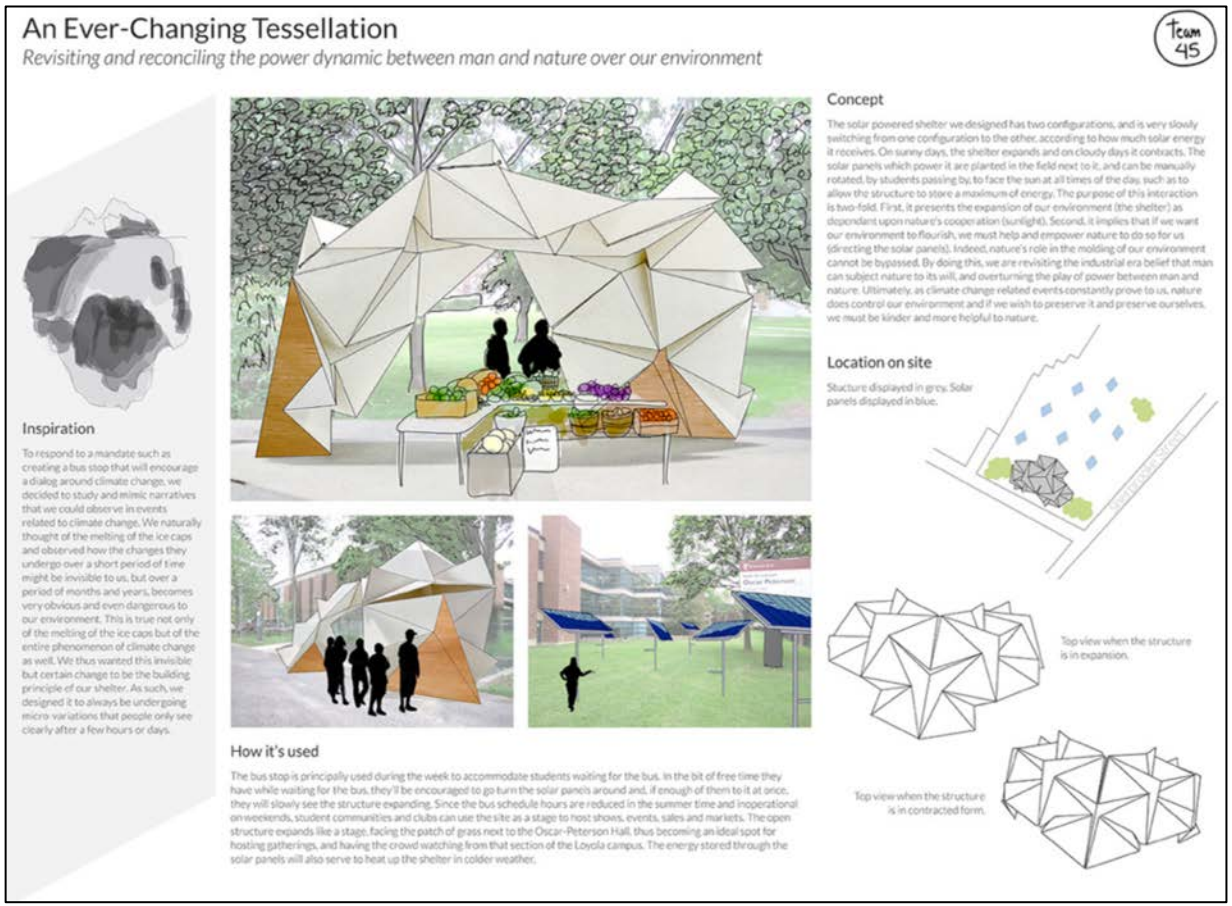
(students from Universite de Montreal, Canada)

Charles Laurence Proulx, Étienne Guinard

(students from Universite Laval, Quebec City)

2nd Prize: Light House

- Symbolic use of technology (lighthouse for university)
- focused on object-form
- solar panel used to illuminate a ‘sun’ atop the lighthouse
- solar panels non-visible atop the structure
- not entirely functional as a shelter

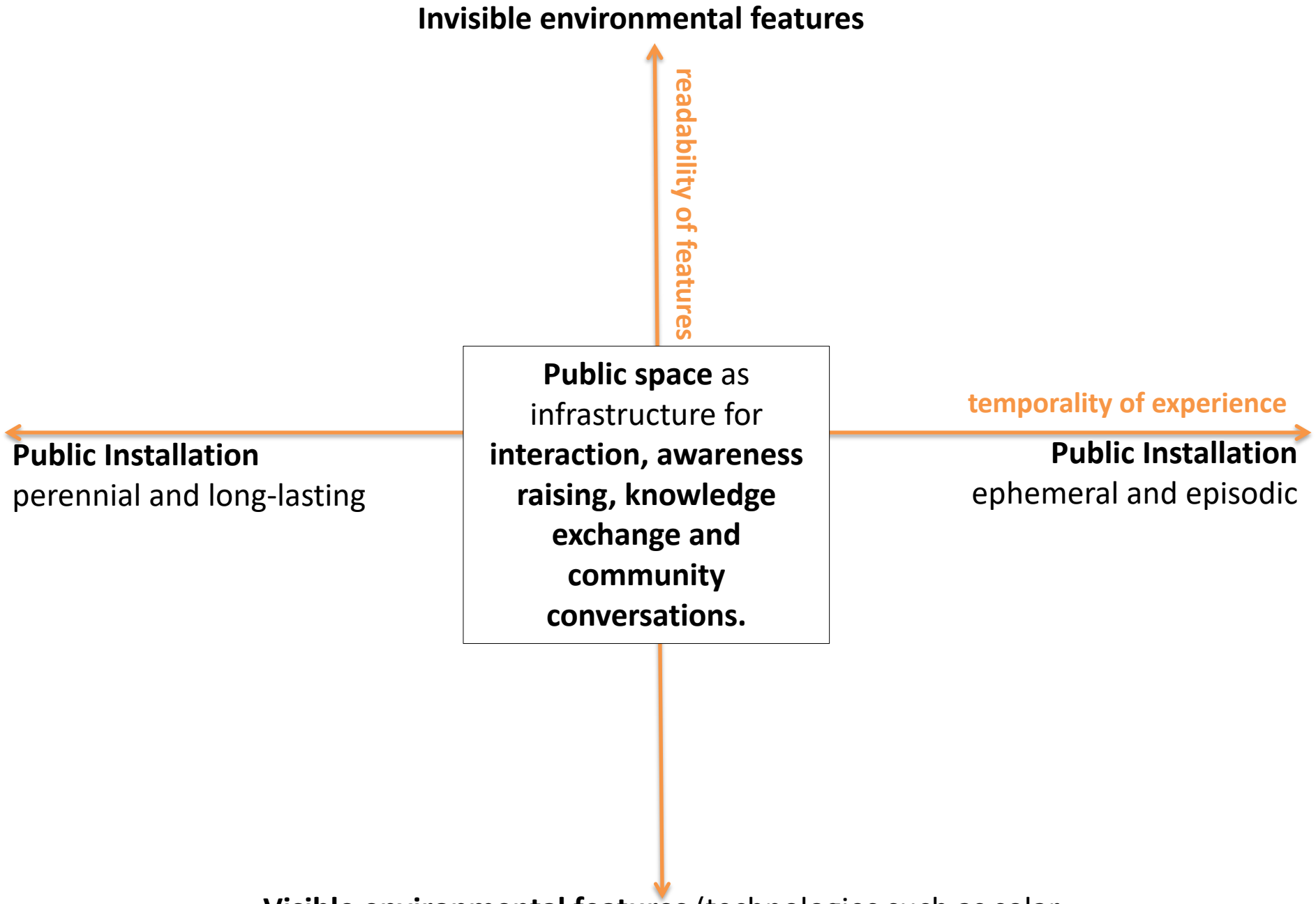


Rachel Tardif, Tatev Yesayan

(students from Concordia University, Montreal)

3rd Prize: Tesselation

- innovative form and composition
- distinctive foldable, flexible, structure
- extended the program to include market stands, book fair stands, etc.
- overly complex to fit budget
- solar panels publicly displayed on site


Invisible environmental features
readability of features
Public space as infrastructure for interaction, awareness raising, knowledge exchange and community conversations.
temporality of experience
Public Installation
perennial and long-lasting
Public Installation
ephemeral and episodic
Visible environmental features (technologies such as solar panels, green walls, green roof, double skin envelopes, etc.)

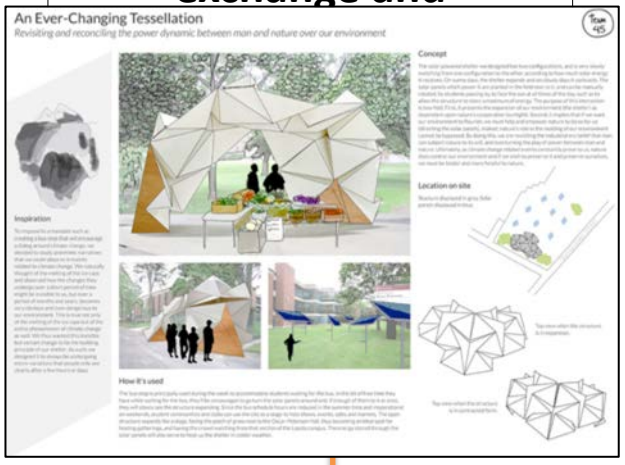
Invisible environmental features

Public space as infrastructure for **interaction, awareness raising, knowledge exchange and**

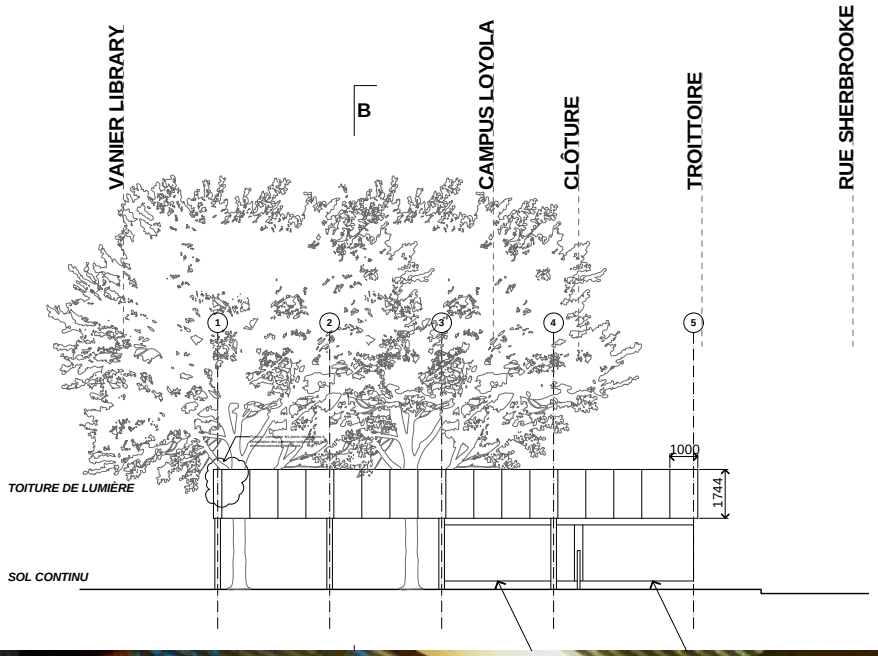
temporality of experience

Public Installation
perennial and long-lasting

Public Installation
ephemeral and episodic



Visible environmental features (technologies such as solar panels, green walls, green roof, double skin envelopes, etc.)



Technical and Program Innovation

The winning team is working with a **team from Centre for Zero Energy Building Studies (*CZEBS*)** and **a team from IDEAS-BE**, to integrate advanced technologies and expertise from CZEBS into the augmented bus shelter.

Our Second Design Challenge

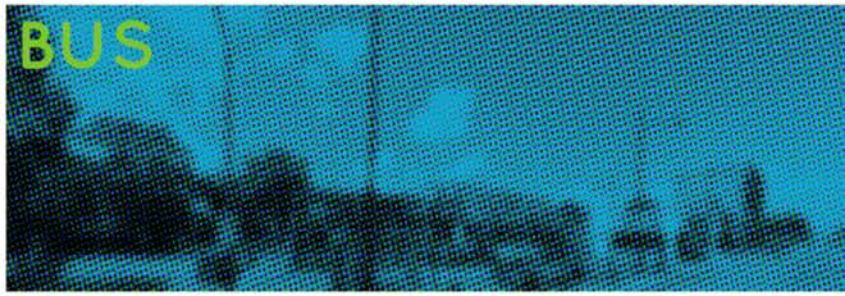
Launched on **February 16th, 2017**.
International student design challenge.

94 teams (403 students) submitted ideas from 21 different countries.

Organized in **partnership** with **CRE Montreal** and the **Research Chair in Competitions** from Université de Montréal

ENVIRONMENTALLY ENGAGED IDEAS COMPETITION

MORE THAN WAITING FOR THE BUS (2017 EDITION)



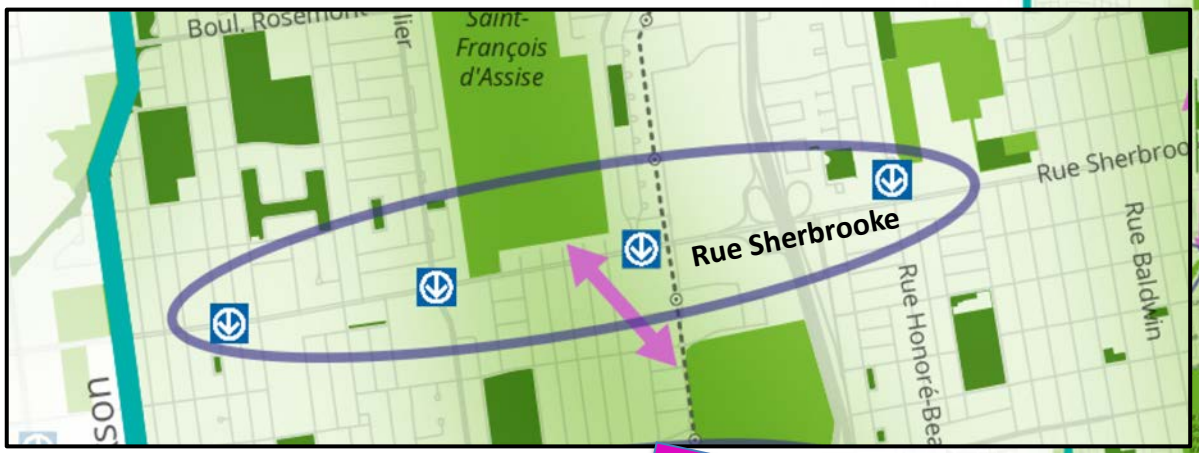
This ideas competition sought both:

(a) Designs that are environmentally engaging; and

(b) a series of principles that could be adopted for future implementation in collaboration with the City of Montreal, the STM and private landowners.

"MORE THAN WAITING FOR THE BUS" wants to expand the vocabulary of bus stop site design. It's aim is to serve as a learning platform for future designers.

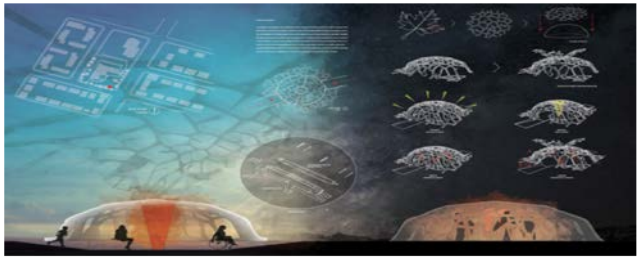
An environmentally engaged ideas competition for reinvigorating public spaces around four bus stops in the ILEAU Territory.



Information Exchange Forum

Held on March 2nd, 2017

Brought together academics, students, community leaders, professionals, city planners, members of the community and media **in a conversation** about how to invigorate bus stops sites in Montreal.

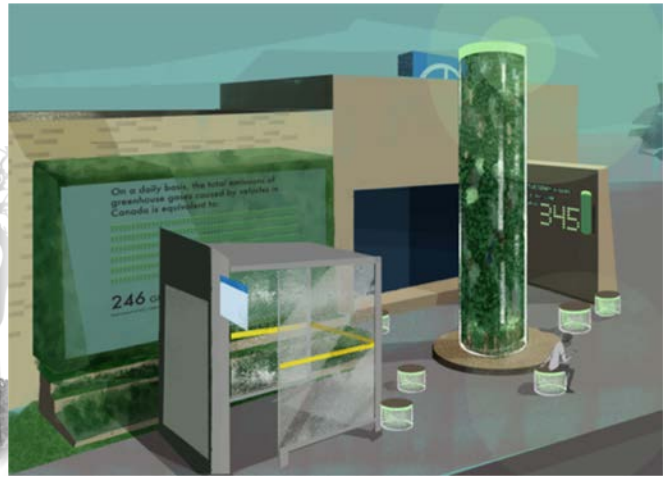


Ideas that inspire citizens to use the bus all year long
by utilizing small neglected spaces surrounding bus stops

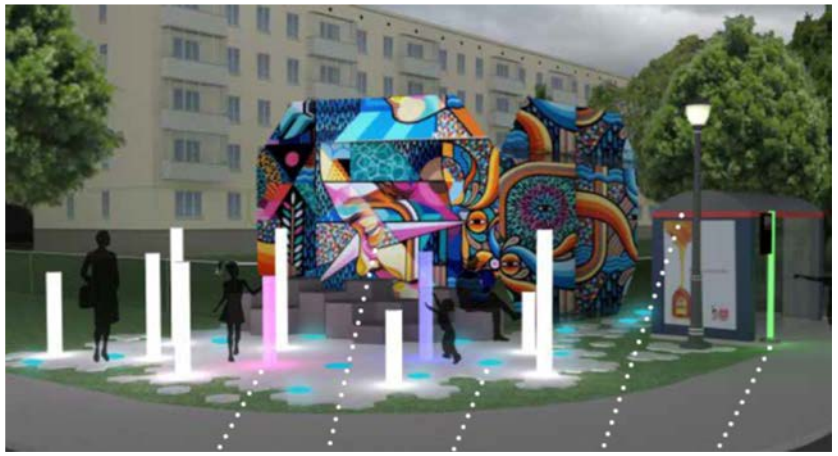
playful

interactive

informative in a direct manner



informative and playful



How does **CoLLaboratoire** contribute to new learning models?

- The **student-community design challenges** encourage unconventional responses – the competition as knowledge creation.

- The **technical + cultural development** of these unconventional ideas bring together students + researchers + community + businesses.

- The **city as a living lab** since **public space** become infrastructure for community **interaction, awareness raising, knowledge exchange and community conversations.**

Helps **bridge the knowledge gap between academic research and collective understanding** of climate change issues.

As a summary, this CURC's research program is 2 main axes:

1. How do the sustainable means embraced by designers and architects today impact the experiential and aesthetic qualities of buildings and public spaces? And when we take this to the urban scale, how do the sustainable means impact impact the overall form and quality of the city?

2. How can design as a process and outcome help heighten climate change awareness in communities while also proposing scalable sustainable solutions for the city?

In both, sustainability is considered beyond managerial approaches regarding both environmental, social and cultural concerns.