

**Cornell University**  
AAP, Department of Architecture

**M.S AAD**

# Augmarena

Spring 2019

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**May 2019**

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ARCH 8903 Projects in Advanced Architecture Design





**Satellite image of Lena Delta Wildlife Reserve:** Image provided by the USGS EROS Data Center Satellite Systems Branch. This image is part of the ongoing Landsat Earth as Art series.

**Tree silhouette :** Image credited to author

## Abstract

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When I think of architecture, images come to my mind, images of worlds different from ours. I believe our world is a collection of overlapping microcosms of different scales, we enter and exit these microcosms daily, but few of them are so small or large in scale that it becomes inconceivable to us. Like the space between the complex matrix of a sponge or a trabecular structure of a bone; between the growth of branches in a tree or spaces in between the riverine system of a river; in the complex neural network of our brain or the networks of streets in our cities. Everything has a world of its own, we have our own world built through interactions of forces from the outside world.

There is another world made up of codes, the digital world, where everything is possible. The world that is built with our imagination, which redefined the way we socialize, communicate, entertain and exchange ideas. We see the influence of the digital world more pressing today than anytime in the history, digital has turned from being a mere anomaly within the reality to be the new reality. My journey through M.S AAD has been the transition from Ecology centered Architecture to Digital Ecology centered Architecture, with the focus on technology as a main driving force.

*"Hope lies in dreams, In imagination and in courage of  
those who dare to make dreams in to reality"  
- Jonas salk*



### Mohammed Mansoor

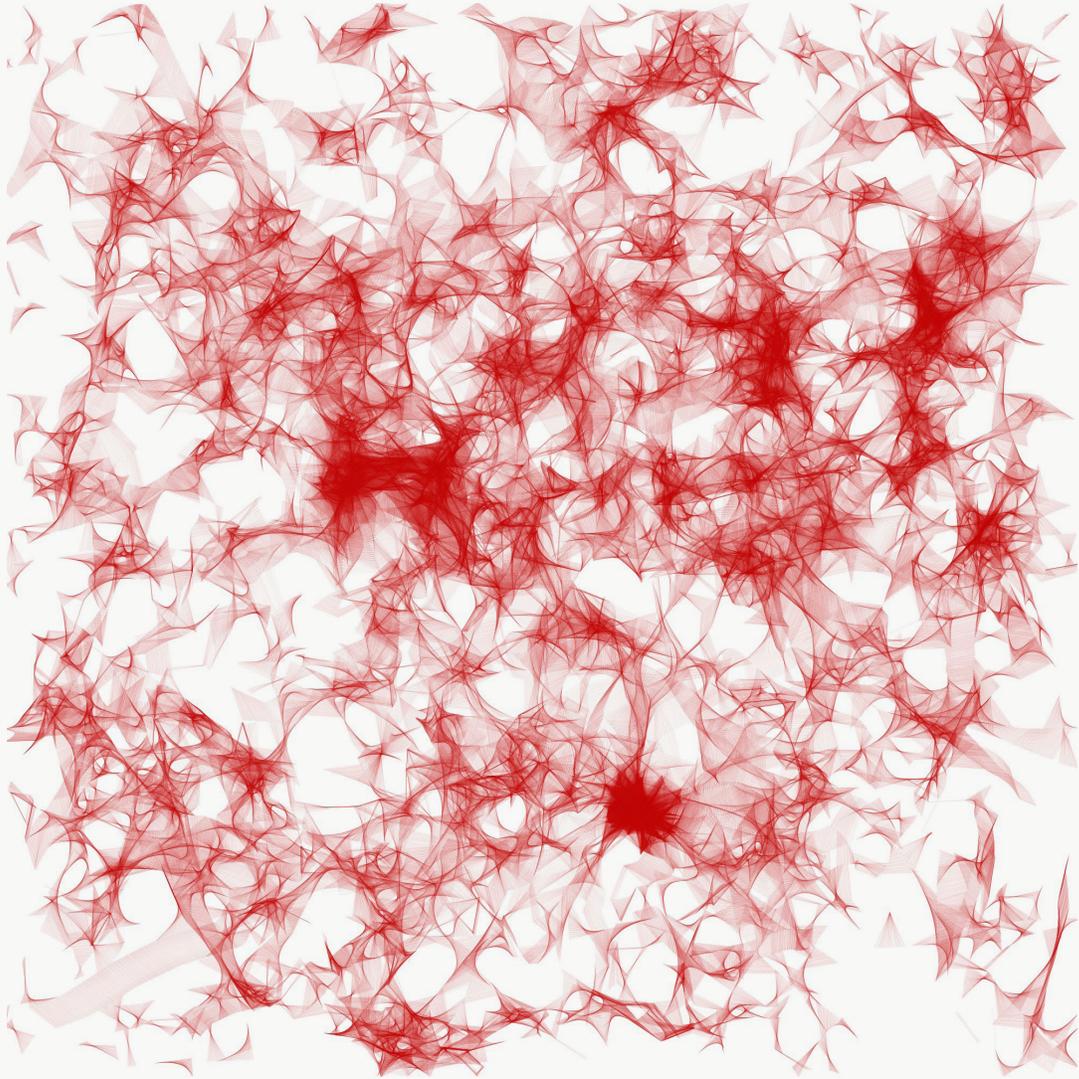
An architect, who maintains dual interest in architectural practice and research, he is a post-professional Masters in Advanced Architectural Design student at Cornell University and holds a Bachelor of Architecture degree with distinction from the University of Mysore in India. During his time at Cornell, he was involved in research investigating Sustainable & Aesthetics in Architecture under Jenny Sabin Lab and he was also a recipient of the Mellon Urbanism Fellowship.

After his under-graduation, he worked under Pritzker Prize-winning architect Kazuyo Sejima and Ryue Nishizawa / SANAA based in Tokyo, Japan as an architectural designer and was part of the core team to design the Sydney Modern Project as well as the winning team to design the National Gallery of Budapest in Hungary. He has worked on projects based in Europe, North America, Australia, and Asia.

Along with his current architectural practice Mohammed Mansoor + Architects/ MoMa, he has been actively involved in academia at Studio Sejima / IoA Institut für Architektur - Vienna, Austria, and as visiting faculty at Mysore School of Architecture and as an Assistant Professor at Wadiyar Centre for Architecture, Mysore and as a Teaching Assistant at Cornell University.



*I dedicate this portfolio to my parents, who supported me all my life in everything I set out to do, and to my wife who stood by me in hardship and happiness in completing my graduate studies*



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**Processing Sketch:** Developed as part of the computational design seminar class during the summer semester in NYC

## ACKNOWLEDGMENT

I would first like to thank my advisor Prof Jonathan Ochshorn of the Department of Architecture at Cornell University and to my minor advisor and the director of my graduate program Prof Jenny Sabin. Whose doors to their office were always open whenever I ran into a trouble spot or had a question about my research. They consistently allowed this portfolio to be my own work but steered me in the right direction whenever they thought I needed it.

I would also like to thank all my studio professors Prof John Zissovici, Martin Miller, David Eugin Moon, Nahyun Hwang, Ayata, Kutan Ayata, Michael Young, Jesse LeCavalier and Tei Carpenter for their amazing guidance and directions.

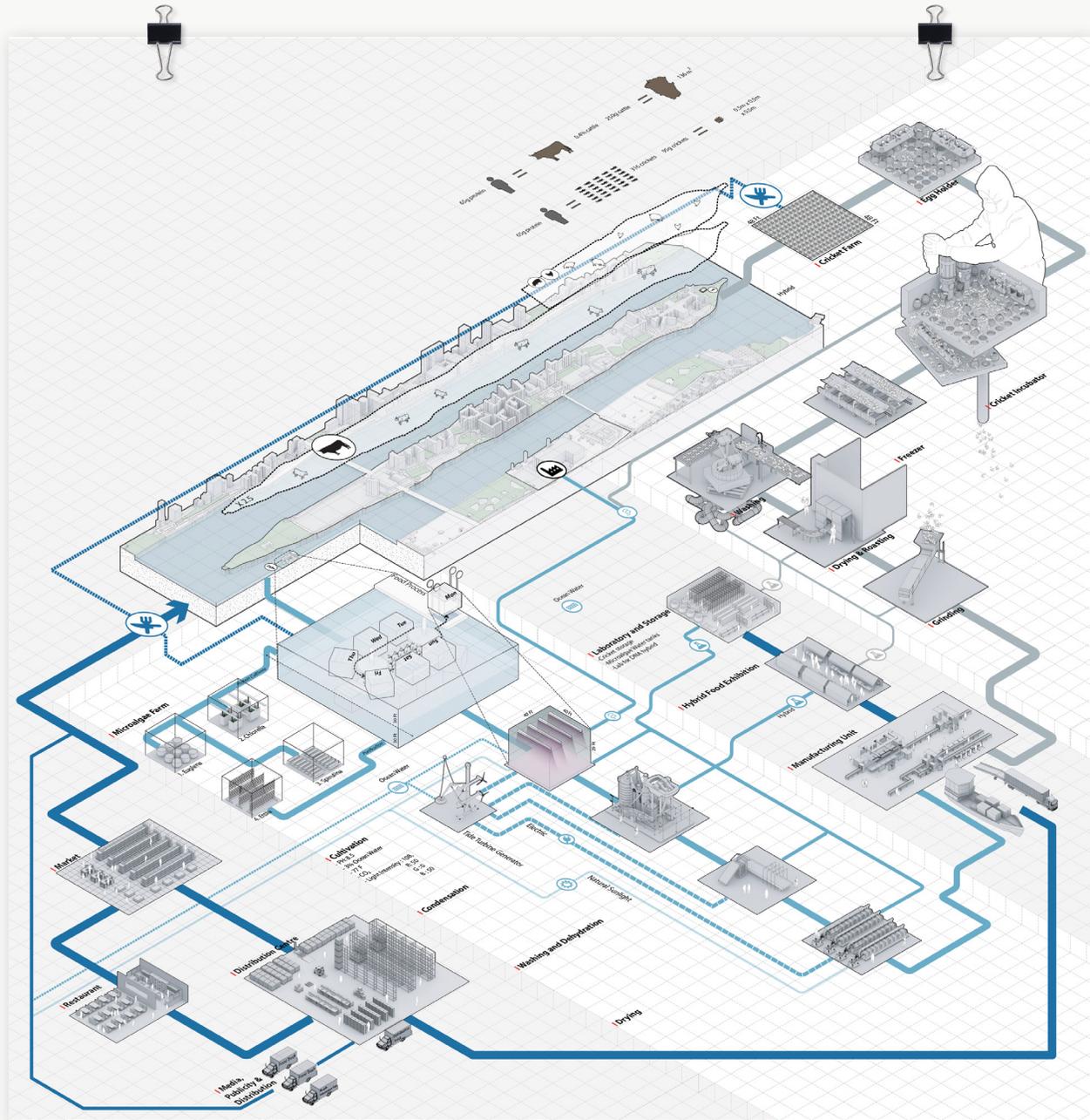
I would also like to acknowledge my seminar class professors, Prof Henry Richardson, Andreas Tjeldflaat, Pedro Erber and Jonathan A Scelsa for their amazing seminar classes that gave me an in-depth knowledge in my territory of investigation.

I would also like to express my sincere gratitude to my fellow classmates for their care and share of all the fun and happiness during my time at Cornell.

Finally, I must express my very profound gratitude to my parents and to my wife for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this essay. This accomplishment would not have been possible without them. Thank you.

Author

Mohammed Mansoor

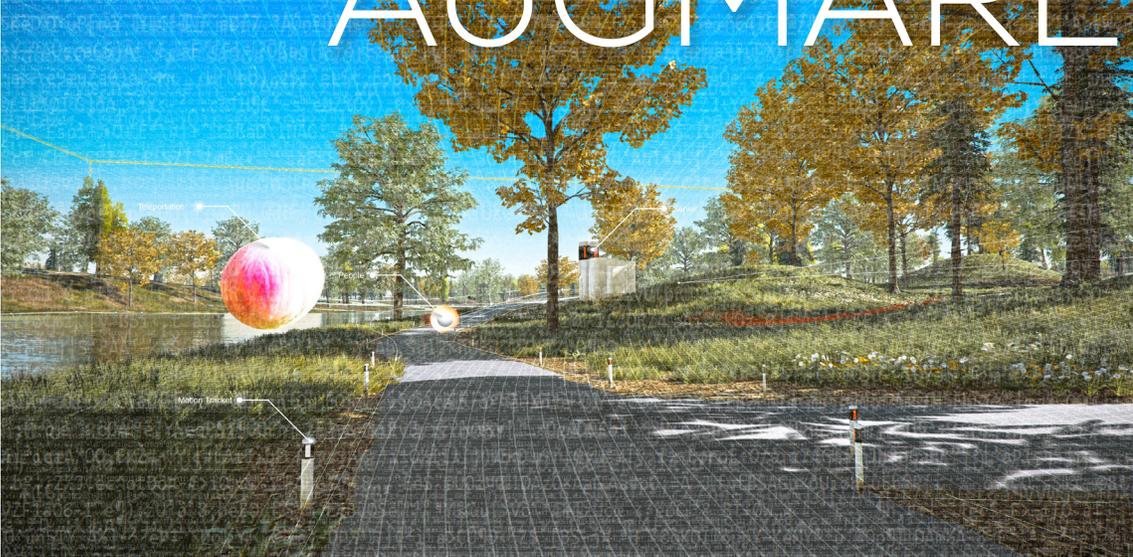


**Future Oriented Protein Cultivation:** System diagram depicting the self sustaining closed loop future protein cultivation in Roosevelt island, produced during the summer semester in NYC

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# AUGMARENA

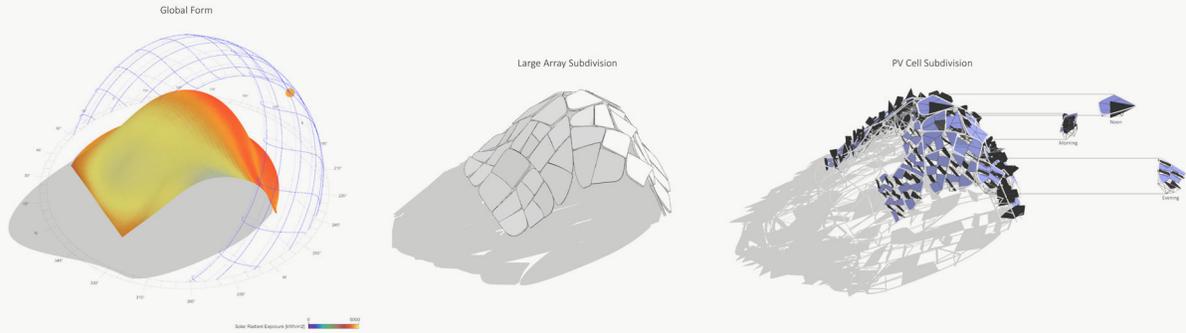


From the Neolithic revolution to the present day, the core purpose of architecture has always been to develop a shelter with matter that would withstand the forces of nature, but the process of developing a shelter had its own inherent complexity. In the quest to find solutions, we have explored the fields of science and mathematics. But it was not until the 17th century when the advancements in mathematics and science started to change the beliefs that were prevalent at that time. It was then, nature was viewed as a subject that could be investigated to find solutions to complex problems that we were facing, then the earlier view of nature as a celestial or godly figure worthy of worship. We now transcended into a new path of exploration and research to understand nature for all its complexity and underlying systems that generates a nonlinear complex order, dynamically interacting with micro and macro level, creating an efficient emergent system to studying the evolution of form in terms of dynamics of the living organism. This motive to understand nature and its governing principles have resulted in many explorations and thesis by scientists.

Architecture + Ecology uses the latest technologies in the field of design computation and material manufacturing to generate and develop artificial systems and materials by understanding how natural systems have evolved and maintained themselves to perform in a more sustainable manner.

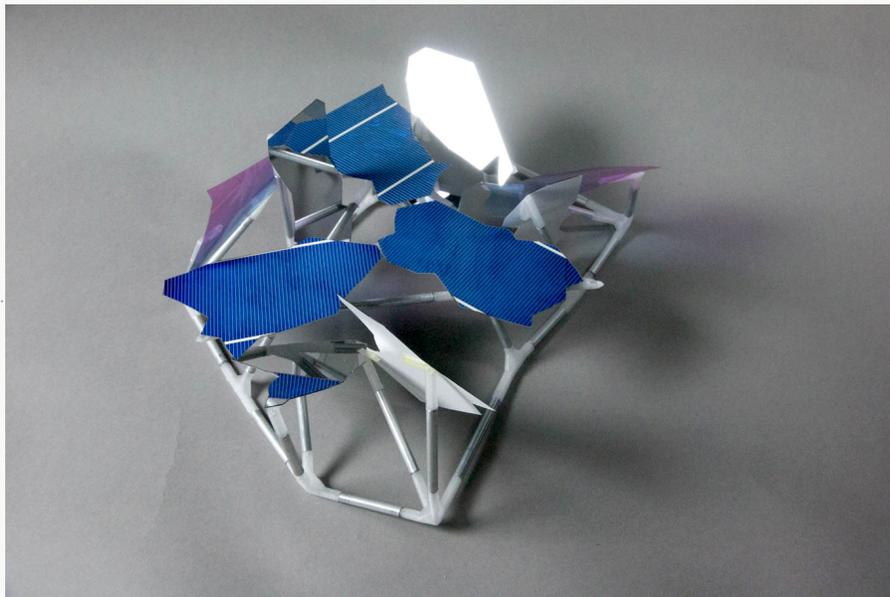
In the recent years, rapid growth and urbanization have shifted the focus from understanding nature to solve the problems of the contemporary world like global warming by proposing a sustainable form of construction synthesized from logic and principles that are found in nature. The concepts of Architecture + Ecology – which uses the latest technologies in the field of design computation and material manufacturing to generate and develop artificial systems and materials by understanding how natural systems have evolved and maintained themselves to perform in a more sustainable

**View form the Augmarena Project:** perspective collage of the landscape generated in Unreal Engine showing the nature of the image as purely digital composed of codes.



manner. It is often being stated that biology was the leading scientific discipline in the 20th century and is set to continue at the center of scientific discourse in the 21st century. Biological studies have set new paradigms in all the creative practices, new research, new modes of analysis and development of new ways of working have emerged from the cross-fertilization of what were

My interest in Architecture + Ecology led me to enroll in Matter Design Computation class led by Prof Jenny Sabin, Investigating Sustainable & Aesthetics in Architecture<sup>1</sup> - an investigation into a paradigm shift in the traditional schools of thought surrounding PV cells. The current technologies, standardization practices,



once separated and discrete professions and academic disciplines.

With this background I chose to embark on academic research in the territory of investigation on Architecture + Ecology, one of the four territories of investigation offered for Master of Science in Advanced Architectural Design at Cornell University others being Architecture + Discourse, Architecture + Representation and Architecture + Urbanism.

**Sustainable & Aesthetics in Architecture:** Image showing the solar radiance mapping and panel subdivision for the pavilion design

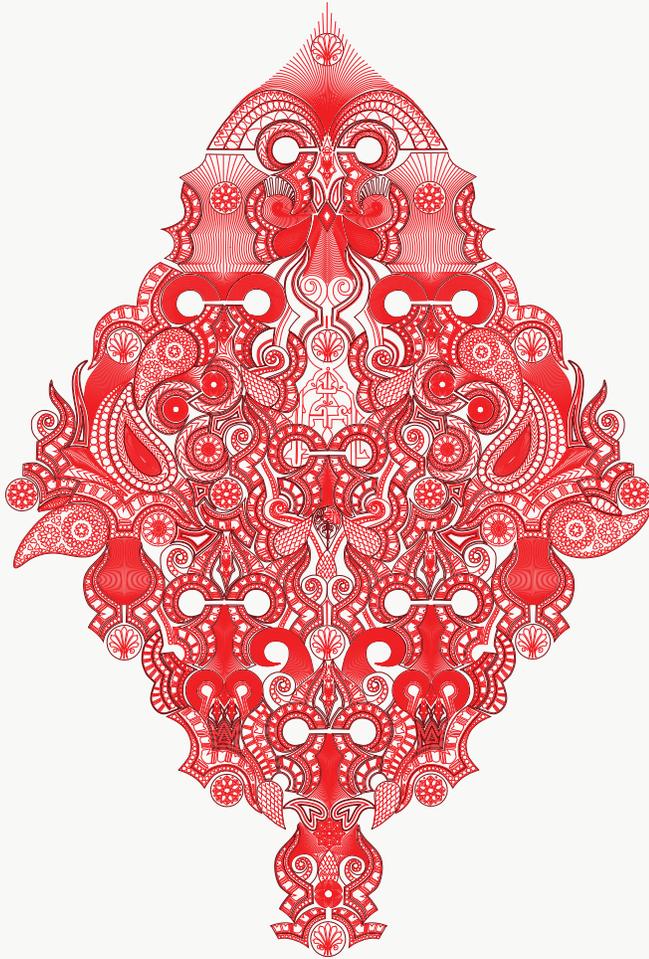
**Sustainable & Aesthetics in Architecture:** 1:1 Scaled morning panel prototype.

[...] retrospection about using technology to develop architectural drawings, at today's time I feel its obsequious, as the use of technology is intrinsic to the concept of progression.

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**Criminal Behavior- Ornamental Exuberance through Efficiency:** Deconstructed drawing, redesigned using the logics of the existing drawing

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[...]CNC machines and robotic fabrication giving architects greater control over manufacturing techniques and efficient fabrication methods and its direct translation into architectural form.

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and transition of the profession of architecture from a mechanical craft to a maker of drawings to the evolution of the concept of intellectual property or authorship rose to prominence in the mid-15th century. The arguments continue towards retrospection about using technology to develop architectural drawings, at today's time I feel its obsequious, as the use of technology is intrinsic to the concept of progression.

In the spring semester, I choose to take the studio led by Prof Martin Miller, that investigated the use of technology for sustainable form of construction – CNC machines for fabrication and construction. The main theme for the studio was the understanding role of technology that undermines the theoretical stance put forward by Adolf Loos in his essay Ornamentation and Crime<sup>3</sup>. In his essay, Adolf Loos argued that ornamentation in architectural design is wasted labor in return a wasted resource. But in contemporary practices it is no longer the case, the labor has been replaced by CNC machines and robotic fabrication giving architects greater control over manufacturing techniques and efficient fabrication methods and its direct translation into architectural form. This repudiates the profession of architecture as makers of drawings and associates it back to the art of mechanical craft.

By contemplating earlier argument by Mario Carpo, it becomes clear about the advent of Computer-aided design or CAD as we know it, has created a paradigm shift in the field of architecture. This ineluctable has its own intrinsic complexity, which brings us to the most interesting question with regards to the ambiguity of the Architect's role: - delineation of Architect's authorship towards contemporary architecture. The key protagonist, The Architect, as described by Giancarlo di Carlo in his article "Architecture's Public"<sup>4</sup>, held many meanings throughout history form being head bricklayer to be a

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and applications present in both BIPV and BAPV forgo the opportunity to utilize PV cell systems as an integral and compelling design element. Often secondary, the integration of PV cells strives simply to be invisible. Based on biological precedents including heliotropic mechanisms in sunflowers and the Lithops spp. plants, we investigated alternative parameterized configurations of PV panels as a means of integrating aesthetics and energy conversion efficiency in the PV array. We collected solar data from both Ithaca in New York State and Tempe in Arizona state, these data served as an initial parameter for creating responsive and customized geometries, light filters, reflectors, and scaffolds.

Parallel to my research with Prof Jenny Sabin, an interesting argument I found in one of the reading for the class by Mario Carpo, in his article "Art of drawing" published in Architectural Design Magazine<sup>2</sup> mainly focused on the evolution of drawing in architecture

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**Gaming Architecture:** Virtual world built using the Unreal Engine - Virtual landscape built as a reflection of the reality



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God, even today the connotation is more synonymous with a divine creator than with the profession of building; never has a human craft had such an ambiguous connotation.

As the transition from manual design to digital design progressed, designers understood the potentials of these new tools. Their architectural form become more complex as it was no longer limited to the calculations of the human mind but to the limitations of human imaginations. The more we stretched the boundaries of architectural form, we encounter new problems with solutions to these new problems we encounter a new paradigm. But the most interesting facet to this development is unveiled when we step back and view the whole development in perspective, that the major advancement in the field of architecture didn't happen because of the Architect, or the Architect wasn't the driving force behind these advancements – it was the software developer – the software developer had to envisage the future and speculate the possible ways the Architect would use these tools to develop architecture, he had to understand and produce all the codes, instructions and tools the Architect would use and feed it into the software for the Architect to exploit it. For the first time, the Architect is no longer the protagonist or tool maker but a spectator or tool user within the meta-system

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and the software developer is a meta-system designer.

This interested me to take up class in spring semester Gaming architecture led by Prof Henry Richardson, Martin Miller, and Timur Dogan– a collaborative class between Epic games and Cornell University, the main goal for the class is to re-purpose the gaming engine software – Unreal engine, to architectural use. Working in collaboration with software developers from Epic Games to add new functionalities and improving existing

**[...]Architectural form become more complex as it was no longer limited to the calculations of the human mind but to the limitations of human imaginations. The more we stretched the boundaries of architectural form, we encounter new problems with solutions to these new problems we encounter a new paradigm.**

[...]To inverse the current reality - where the virtual forms an anomaly in the real world. To create a virtual world and to make reality an anomaly in this virtual space.

one to architectural use. This brings back to the previous ideological question regarding the authorship and architects not being the protagonist in the advancement in contemporary architecture. This class reinstates the role of architects as the key protagonist in the advancement of contemporary architecture.

In my fall studio led by Prof John Zissovici focused on technology and its implication in Human Ecology. Mainly focused on Virtual reality and Augmented reality, revolved around reading Into the Universe of Technical Images by Vilém Flusser<sup>5</sup>, this led me to question the idea of virtual reality and Social network. At the turn of the 21st century, we embraced the idea of Social network. A system of virtual spaces where we share, chat and interact with our fellow human beings. This space has a major setback that it is detached from reality. It is composed of codes in a digital hemisphere, in Flusser's term, a Technical Image. We interact in this virtual space

using words or texts, compared to emotions, facial expressions, body language and speech in the real world. To interact with this virtual world, we must use a medium - i.e. your Phone, Table or PC. - And it is this medium that creates a boundary between the real and virtual world. This paradigm shift gave birth to new form of ecology called Digital Ecology<sup>6</sup>, defined as:

*"A closed set of digital and non-digital artifacts and a user acting as nodes of a network where its boundaries are specified by an activity and the structure and patterns of organization are either user and/or designer defined."*

My Project, Augmarena is a portmanteau constructed using two words: Augmented reality and Arena - "space for an activity". The project aspires to bridge the gap between real and virtual social space, by creating the real world as anomalies in the virtual space and creating a new Digital Ecology.

Human beings are one of the most advanced living organisms capable of speech, thinking, and imagination. This allows us to interact with our fellow human beings to express our thoughts, emotions, feelings, and desires. This result is the creation of language, poetry, music, film, art, and in recent years the social network. This power allowed our imagination to go wild and realize Ideas that could not exist in the real world. Hence, we



**Augmarena - A Trans-Dimensional Social Network**

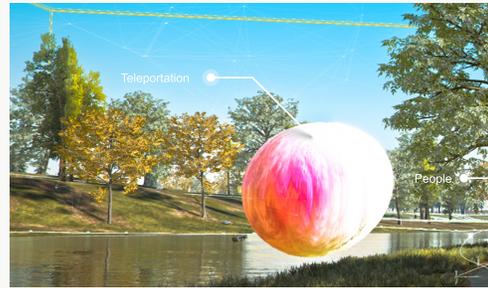
: Still from the short film Augmarena, showing the reality as the anomaly within the virtual world and the interface that controls the digital ecology.

invented the world of virtual reality, which revolutionized the way we materialize our imagination. We produced games and animations, to realize these impossible dreams of ours. The advancement in technology allowed us to construct virtual reality in the image of reality. The closer we get to the image of reality, the more detached we get from reality.

We are more reliant on Digital Ecology for both social aspects as well as for their entertainment needs. This brings us to an interesting point in history where everyone holds a device that gives access to virtual world and the advancement in both hardware (Nvidia's Real-time ray-tracing capable graphics cards) and software capabilities ( advancement of games engines in to other industry like architecture and product development, which can mimic the reality in virtual space) has pushed the Augmented Reality and Virtual Reality technology to mainstream.

These recent advancements with projections from media, films, and literature. As well as the comfort and satisfaction one gets from constructing the reality on one's own vision. We can conclude that we are heading in the trajectory of a world governed by Digital Ecology. This allows for an opportunity to rethink and redevelop the ways in which one can interact in this Digital Ecology. With this opportunity, I proposed my final project for the fall studio to inverse the current reality - where the virtual forms an anomaly in the real world. To create a virtual world and to make reality an anomaly in this virtual space. The reality presents constantly if one needs to be reminded but could be forgotten if one decides not to acknowledge the presence. The fellow participants form the floating anomalies in the virtual space, whose geographic proximities to you are based on real-world proximity. And their persona is defined by their individual desire to personify themselves in their own imagination.

This concludes my architectural pedagogical from Ecology centered Architecture to Digital Ecology centered Architecture, with the focus on technology as a main driving force.



#### Augmarena - A Trans-Dimensional Social Network :

1. Portal for transcending in to a spherical world - Activated by walking in to it. Spherical world is a virtual version of the maps that we find in parks, but due to immense possibility the maps are 3d space where the world is a inverted sphere
2. People are Geo-located within the virtual world by using facial recognition technology and their positions are marked with objects of individual interest similar to profile pictures or geometric shapes and their color and flicker state representing the emotion or feelings of the person.
3. Due to requirement for high computational power the servers locate as artifacts with in the park. Reminiscent of statues and ruins. They run independent of the global network catering to people only within the reach of its wireless network, making content specific to the site.

1. Allison Bennett, Evan Mcdowell, Ian Pica Limbaseanu, Kevin Huberty, Mohamed Mansoor, Omar Dairi: Sustainable Architecture and Aesthetics Paper - Fall 2018 ARCH6605 Matter Design Computation, Cornell University.
2. Mario Carpo: Art of Drawings, Architectural Design, issue no 225, Sept/Oct 2013, Wiley Publication.
3. Adolf Loos (1908). Ornament and Crime. Innsbruck, reprint Vienna, 1930. Archived from the original on 2015-04-03.
4. Giancarlo di Carlo : 'Architecture's Public', in Architecture and Participation, ed. by Peter Blundell Jones, Doina Petrescu and Jeremy Till (Abingdon: Spon Press, 2007), pp. 3-22
5. Vilém Flusser : Into the Universe of Technical Images, (1985) University of Minnesota Press, ISBN 978-0-8166-7021-5
6. Dimitrios Raptis, Jesper Kjeldskov, Mikael B. Skov, Jeni Paay : What is a Digital Ecology? Theoretical Foundations and a Unified Definition, Research Paper, Aalborg University, Denmark

# FUTURE ORIENTED PROTEIN CULTIVATION

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The studio was interested in a concept of ecology that considers economies of use, value, resource exchange, and mutualistic benefits within systems of waste and energy. What kind of collateral outcomes might result if one of these systems could be imagined as a sponsor or generator—in other words, as more than just a means to an end?

What are the possibilities and consequences of speculating on a system not as hermetic, isolated, or as an efficient machine, but rather as something designed with a generosity for greater collectivity or an ability to offer public amenities?

In pursuit of this, we have used Roosevelt Island to study these systems and their collective potential. During our research, we considered ways in which our system contributes to Roosevelt Island but also how it might fit into New York's larger infrastructural ecology. Thought broadly and creatively about the ways in which our system might enrich life on the island in a range of architectural terms, e.g. through space, experience, program, atmosphere, expression, etc. We are interested in the ways that infrastructure can generate and inform architectural responses.

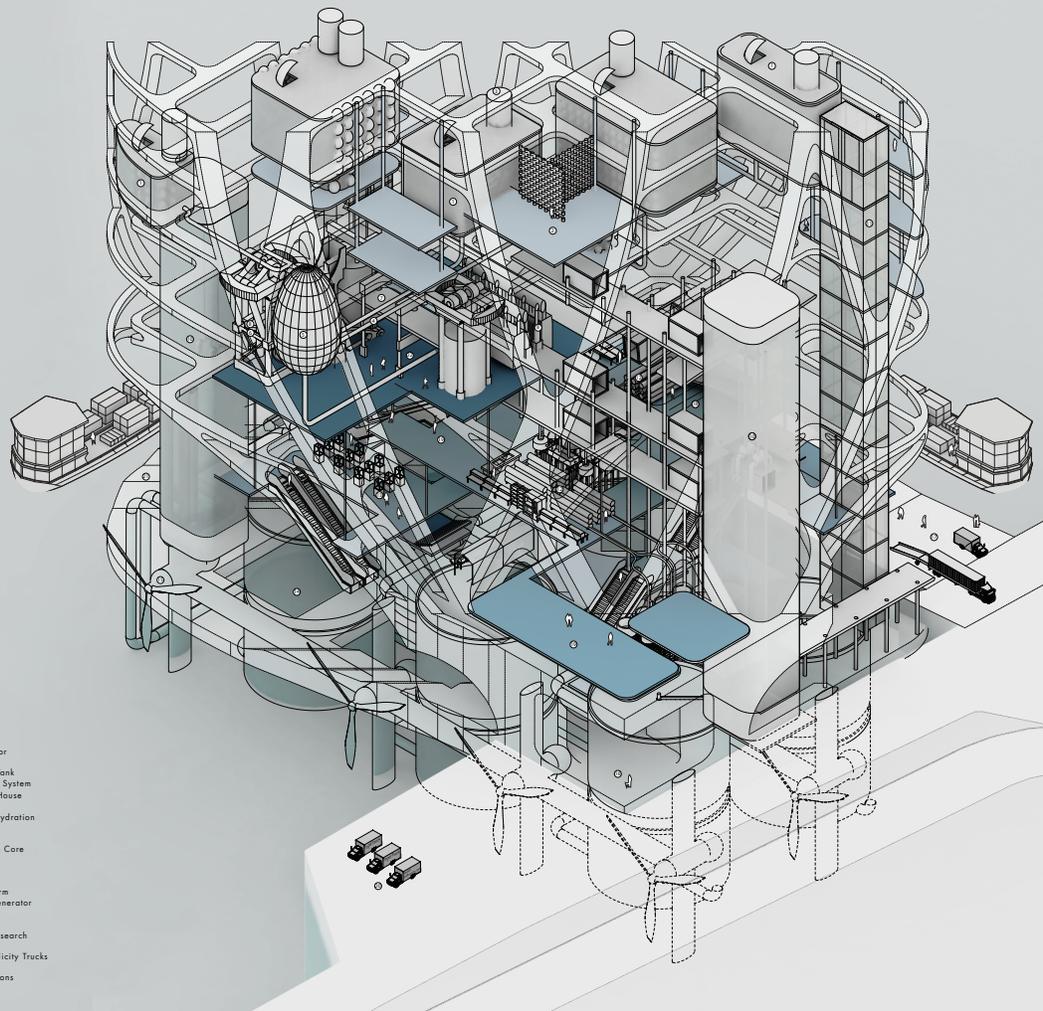
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## **Cornell University Architecture, Art and Planning**

Faculty: Tei Carpenter & Jesse LeCavalier  
Team: Chang-Feng Lee, Seung Won Seo,  
Jiayi Yi, Yihe Zhang, Mohammed Mansoor

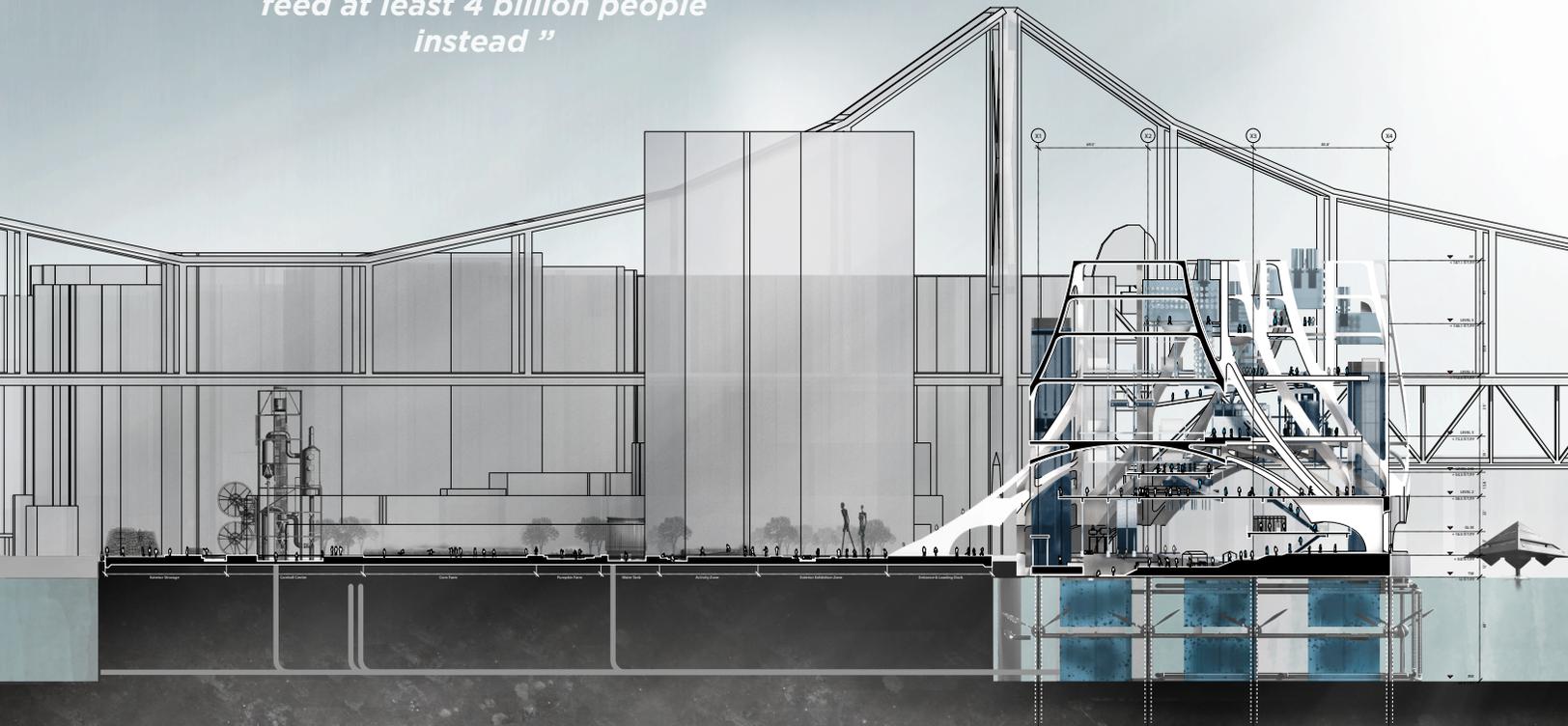
Degree: M.S. AAD  
Semester: Summer 2018  
Duration: 2 Weeks  
Software: Rhino, Vray, Photoshop, Illustrator  
Site : Roosevelt Island, New York, NY  
Type : Architecture + Ecology, Infrastructural  
Symbiosis, Food Production system.

[ Isometric View ]



[ Longitudinal Section ]

*“ Total supply of crops being fed to animals in meat industry could feed at least 4 billion people instead ”*



Question:

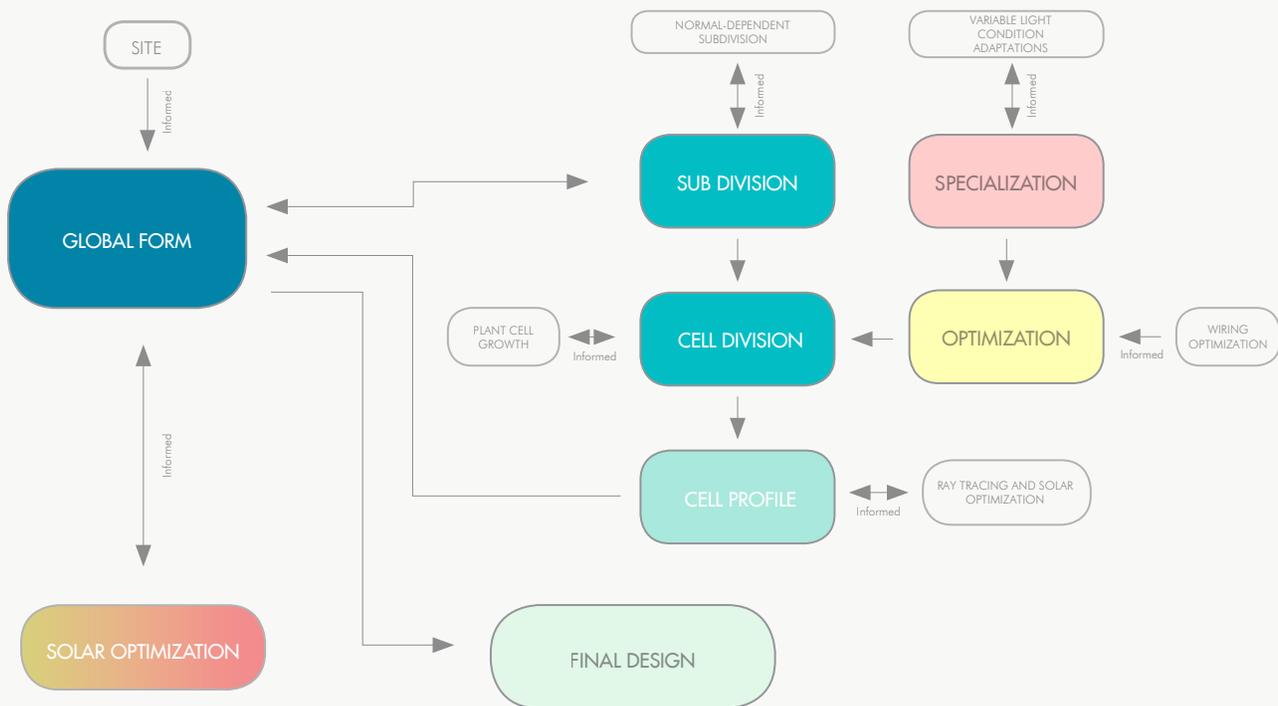
Within an expanded understanding of ecology, what are the architectural and infrastructural possibilities that emerge from the close examination of intersecting systems of waste and energy? How might we harness, redirect, or otherwise engage the metabolic processes within these systems?

This workshop was to explore an expanded idea of ecology that encompasses not just the natural environment but also recognizes the entanglements of human-made products and byproducts within its definition. In the context of global warming and the Anthropocene, the studio posits ecology as a circular system of inputs and outputs that may include everything from organic materials such as water and soil to human trash and energy demands. Rather than considering these elements in isolation, we pursue a synthetic understanding of them in relationship to one another within a larger system of mutual benefits and trade offs. By challenging prevailing sustainability discourse that tends towards quick efficient solutions, objective metrics (e.g. LEED Standards), and assumptions about maintaining a stable version of nature, a kind of "counter-ecology" emerges with its own energetic, architectural, and aesthetic significance. Our interest here is specifically in the food and infrastructure systems that are part of the ecology of the city. As these intertwined systems encounter each other, opportunities emerge as conflicts are negotiated, leading in turn to a more nimble and opportunistic design approach.



*[ Sectional 3d Printed Model ]*

# SUSTAINABLE ARCHITECTURE & AESTHETICS



Cornell University Architecture, Art and Planning

Faculty: Jenny Sabin  
 Team: Allison Burnett, Evan McDowell, Ian Pica, Limbaseanu, Kevin Huberty, Mohammed Mansoor, Omar Dairi  
 Degree: M.S. AAD  
 Semester: Fall 2018  
 Duration: 1 Semester  
 Software: Rhino, Grasshopper, DIVA, Vray, Photoshop, Illustrator  
 Site : Ithaca, New York, NY  
 Type : Architecture Research, Solar Panels, Sustainable design, Heliotropism, Bio - Architecture, Matter Design Computation.

## Problem

The task of designing solar panels is traditionally understood as an engineering initiative, not an architectural problem. This causes solar panel design to ignore many spatial and aesthetic opportunities inherent in the concept of a building as a solar energy-collecting apparatus.

## Proposal

We will design an architecture celebrating solar panel technology, with the goal of raising public awareness and excitement about renewable energy as a foundation of architectural design. Looking to biological precedents and basic astronomical principles, we will elevate the role of architecture in converting solar radiation into electricity.

## Research Background

### Sub division

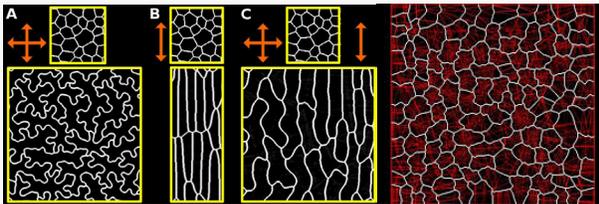
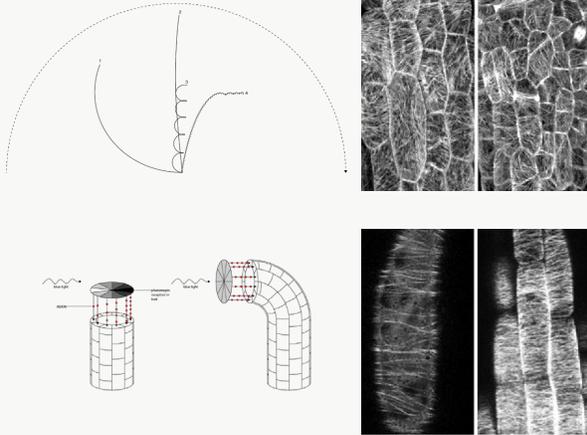
#### Heliotropic response

- Investigated chemical mechanisms of heliotropic growth in sunflowers and other plants
- The heliotropic response relies on both additive and subtractive forces
- Analyzed how these changes at the micro scale lead to macro scale form development
- Conceptual relationship between these scalar quantities and the PV cell to pavilion scales

### Cell profile

#### Puzzle cells

- Investigates mechanical stresses at the cellular level in plants
- Attempts to model these stresses
- Understands that mechanical stress is a driver of cell-shape Morphogenesis
- Morphogenesis: The origin and development of formal or structural qualities



Aleksandra Sapala, Adam Runions, Anne-Lise Routier-Kierzkowska, Mainak Das Gupta, Lilan Hong, Hugo Hofhuis, Stéphane Verger, Gabriella Mosca, Chun-Biu Li, Angela Hay, Olivier Hamant, Adrienne HK Roeder, Miltos Tsiantis, Przemyslaw Prusinkiewicz, Richard S Smith

<https://elifesciences.org/articles/32794#fig2>

Step 1: Generate Micro fibril network based on cell start geometry

Step 2: Relax fibril network forces and displace cell perimeter segments based on desired growth type (isotropic, anisotropic)

Step 3: Update cell shapes to find mechanical equilibrium

Step 4: Re-generate Micro-fibril network, update rest-length of cell perimeter segments puzzle cells should appear when cells stop dividing and tissue growth is not primarily in one direction

## Methods

### For Global form

Three definitions of "optimal" global forms for solar panels.

- Sunlight hits solar panels at angle of  $90^\circ$  as often as possible.
- Solar irradiance (power per unit area) is maximized.
- Light is reflected onto PV's that would not otherwise reach them.

#### Evaluation Methods

- Radiative heating and cooling/PV efficiency metrics
- Daylighting simulation for interior and exterior
- Ray tracing visualization

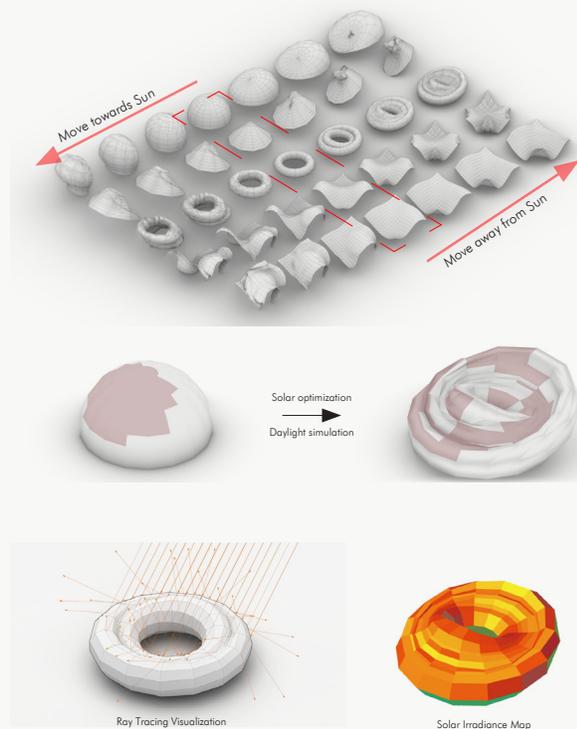
#### Variables

- Solar Panels
  - Black-body emissivity
  - Temperature coefficient
- Shading Geometry

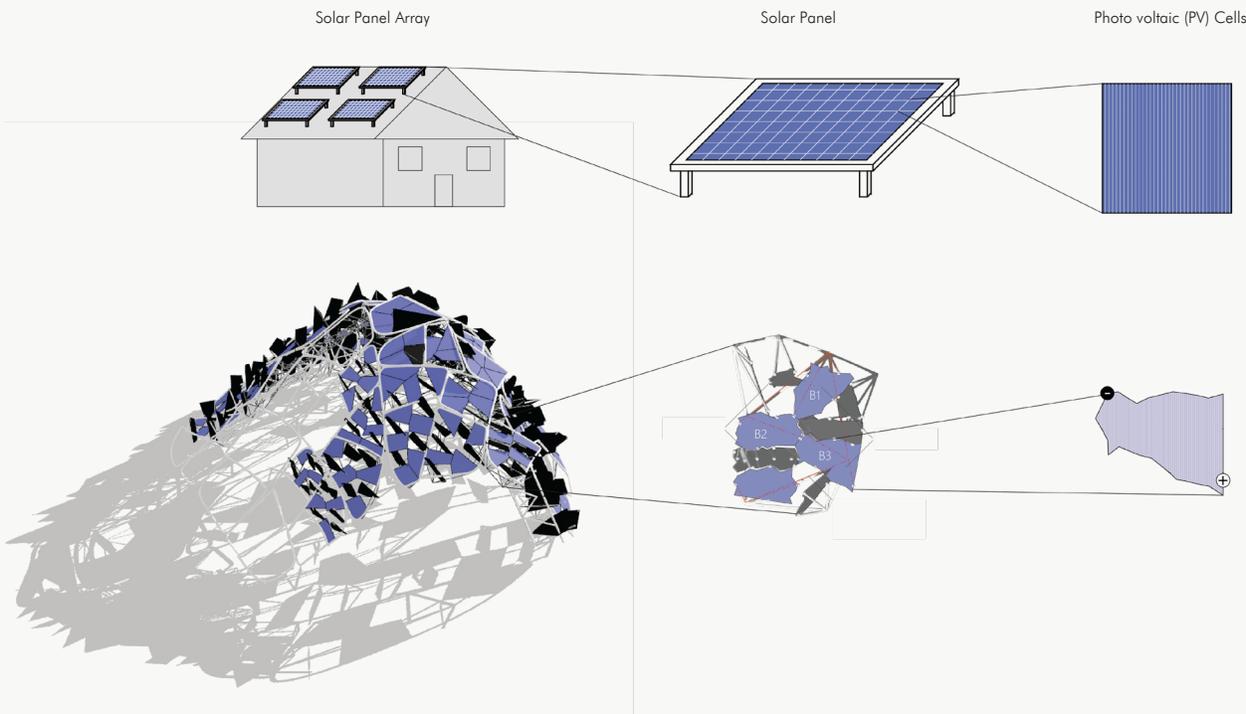
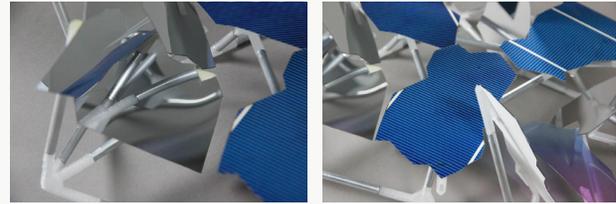
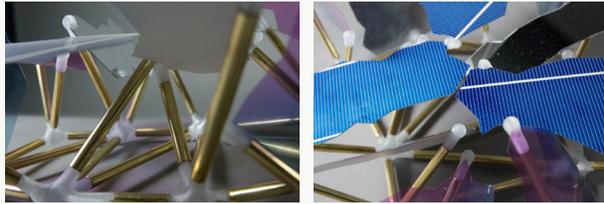
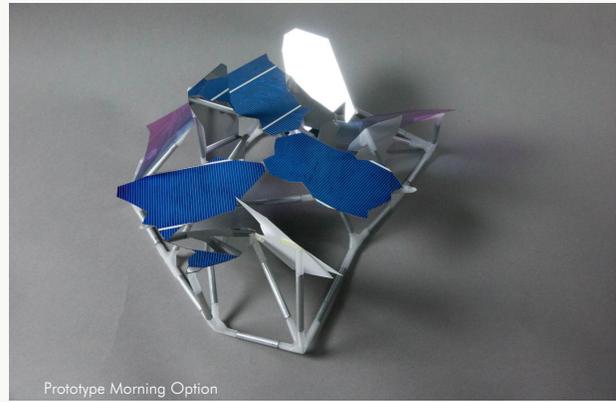
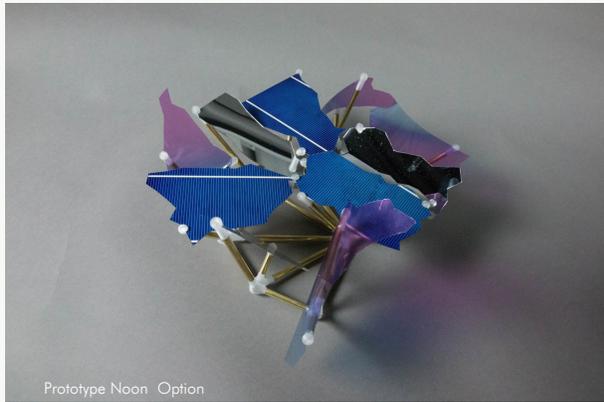
Taking into account site & context specific factors, simulations give accurate pseudo-real world data that can be used with simple models for solar absorption and loss to calculate an equilibrium temperature which can then be factored into an efficiency calculation.

#### Ray Tracing Visualization

Taking into account site & context specific factors, and give accurate pseudo-real world simulation that can be used with simple models for Reflection of solar rays and visualize their behavior with surface materials and PVs.







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Gal, A., et al (2012), Certain Biominerals in Leaves Function as Light Scatterers. *Adv. Mater.*, 24:OP77-OP83. doi:10.1002/adma.201104548

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M. Benghanem, Optimization of tilt angle for solar panel: Case study for Madinah, Saudi Arabia, *Applied Energy*, Volume 88, Issue 4, 2011, Pages 1427-1433, ISSN 0306-2619, <https://doi.org/10.1016/j.apenergy.2010.10.001>.

Hong, Lilan, et al. "Heterogeneity and Robustness in Plant Morphogenesis: From Cells to Organs." *Annual Review of Plant Biology* Vol. 69 (2018):469-495



# AUGMARENA / A TRANS- DIMENSIONAL SOCIAL NETWORK

## Cornell University Architecture, Art and Planning

Faculty: John Zissovici  
Degree: M.S. AAD  
Semester: Fall Studio 2018  
Duration: 1 Semester  
Software: Unreal Engine, Processing, After Effects,  
Premier Pro, Word Processor.  
Hardware: Olympus OMD 10, Drone DJI Spark, Samsung  
Gear 360  
Site : Delaware Park, Buffalo, NY  
Type : Architecture Research, Augmented Reality, Virtual  
Reality, Technical Image and Nature of Code.



At the turn of 21st century, we embraced the idea of Social network. A system of virtual spaces where we share, chat and interact with our fellow human beings. This space has a major set back that it is detached from reality. It is composed of codes in a digital hemisphere, in Flusser's term, a Technical Image. We interact in this virtual space using words or texts, compared to emotions, facial expressions, body language and speech in the real world. To interact with this virtual world, we must use a medium i.e. your Phone, Table or PC. And it is this medium that creates a boundary between real and virtual world.

Augmarena is a portmanteau constructed using two words. Augmented reality and Arena (space for an activity). The project aspires to bridge the gap between real and virtual social space, by creating real world as anomalies in the virtual space.

Human beings are one of the most advanced living organisms capable of speech, thinking and imagination. This allows us to interact with our fellow human beings to express our thoughts, emotions, feelings and

desires. This resulted in creation of language, poetry, music, film, art, and in recent years the social network. This power allowed our imagination to go wild, that sometimes it was impossible to realize them in reality. Hence, we invented the world of virtual reality, which revolutionized the way we materialize our imagination. We produced games and animations, to realize these impossible dreams of ours. The advancement in technology allowed us to construct virtual spaces in the image of reality. The closer we get to the image of reality, the more detached we get from reality.

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We are more reliant on virtual space for both social aspect as well as for their entertainment needs. This brings us to an interesting point in history where everyone holds a device that gives access to this virtual space and the advancement in both hardware ( Nvidia's Real-time ray-tracing capable graphic cards) and software capabilities ( advancement of games engines in to other industry like Architecture and product development, which can mimic the reality in virtual space) has pushed the Augmented Reality and Virtual Reality technology to mainstream.

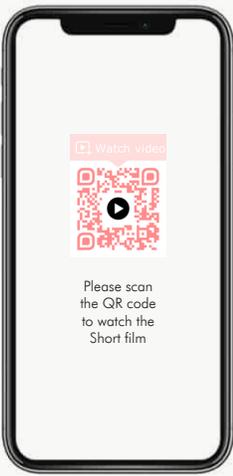
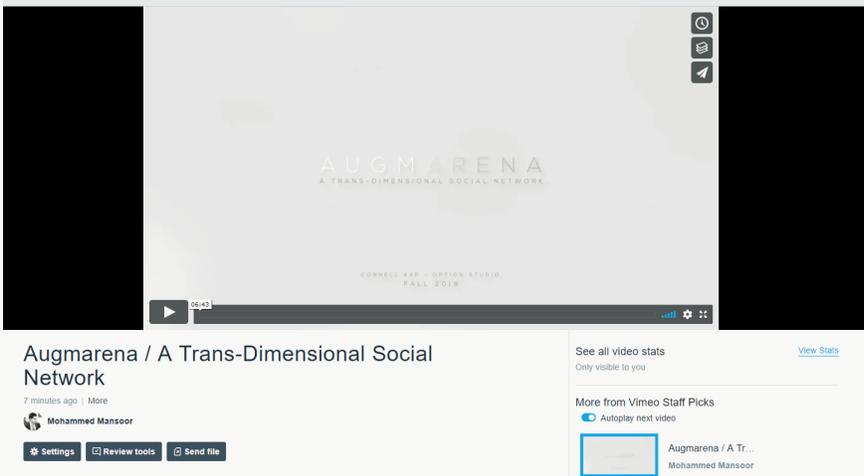
These recent advancements with projections from media, films and literature. As well as the comfort and satisfaction one gets from constructing the reality on one's own vision. We can conclude that we are heading in the trajectory of a world governed by virtual space. This allows for an opportunity to rethink and redevelop the ways in which one can interact in this virtual world. With this opportunity I propose to inverse the current reality, where the virtual forms an anomaly in the real world. To create a virtual world and to make reality an anomaly in this virtual space. A space where one would dwell in the perfect virtual world with reality as a reflection in the sky. The reality present constantly if one need to be reminded but could be forgotten, if one decides not to acknowledge the presence by looking up. The fellow participants form the floating anomalies in the virtual space, whose geographic proximities to you are based on real world proximity. And their persona is defined by their individual desire to personify themselves in their own imagination.



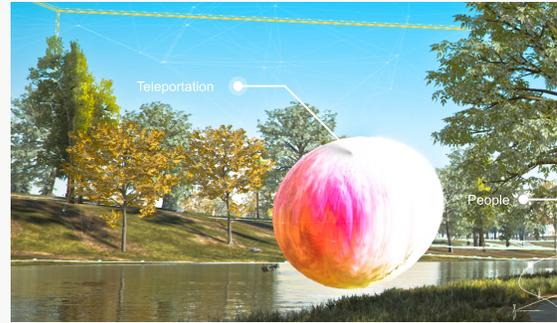
+ Delaware Park, Buffalo, NY

+ Augmarena is an initiative to inverse this process of bringing virtual content as anomalies in the real world to bringing the real world as anomalies in the virtual world by taking Olmsted Delaware park, which was a manifestation of Frederick Law Olmsted's vision of a public park to transform the American urban scape, a transition in social system to make parks accessible to all sections of the society. Augmarena is a new transition from reality to virtual world that would allow people to engage in virtual space with Delaware park as an arena to experiment this new social system, and with selective infusion of reality in to virtual world as anomalies. This allow us to engage in a new social system that would connect us in a multidimensional way, which would have been impossible in a real world.

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Portal for transcending in to a spherical world - Activated by walking in to it. Spherical world is a virtual version of the maps that we find in parks, but due to immense possibility the maps are 3d space where the world is a inverted sphere



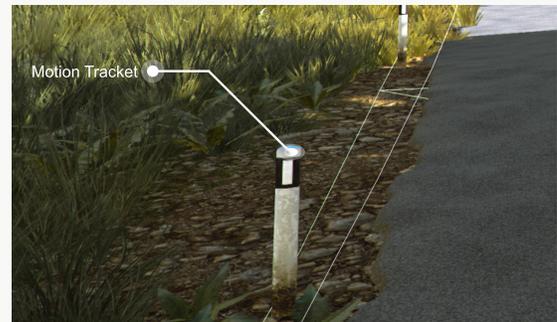
People are Geo-located within the virtual world by using facial recognition technology and their positions are marked with objects of individual interest similar to profile pictures or geometric shapes and their color and flicker state representing the emotion or feelings of the person.



Due to requirement for high computational power the servers are locate as artifacts with in the park. Reminiscent of statues and ruins. They run independent of the global network catering to people only within the reach of its wireless network, making content specific to the site.



Motion tracked light guides to track the movement of people and to scan them to recreate them in virtual space. To protect the people from deviating too much from the virtual space and protect from accidents.



Virtual vegetation and fauna to mimic the reality and to create a true immersive environment with ambient and atmospheric effects as well as to change the landscape based on the user needs.





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