

BROOKLYN SAYS, “MOVE TO  
DETROIT”

105<sup>TH</sup> ACSA ANNUAL MEETING | DETROIT, MI

LUIS FRANCISCO RICO-GUTIERREZ  
MARTHA THORNE

ABSTRACT BOOK

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## **2017 ACSA 105<sup>TH</sup> ANNUAL MEETING**

Brooklyn Says, “Move to Detroit”

### **CO-CHAIRS**

Luis Francisco Rico-Gutierrez, Iowa State University

Martha Thorne, IE University

### **HOST SCHOOLS**

University of Detroit Mercy

Lawrence Technological University

University of Michigan

Cranbrook Academy of Art



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THURSDAY

# Open: The Stadium: Architecture, Urban Regeneration, and Politics

## **A METHODOLOGICAL ASSESSMENT OF STADIA'S URBAN PERFORMANCE: THE CASE OF THE STADE DE FRANCE.**

Gustavo Amaral, Georgia Institute of Technology

The main focus of this paper is the analysis of stadia, designed and built for major events, and their achievements as centerpieces in the process of urban transformation. The design trends that have dominated stadia design along the 20th century were a consequence of morphological transformations, which incorporated new technologies and construction systems, culminating in a new functionality of this building typology, enabling it to serve as a catalyst for urban development, redevelopment, or even the urbanization of new areas. The research analyzes two Parisian stadia, built in different time periods and their specific relationship with, political regimes and their social context. In 1998 the construction of the Stade de France was seen as a way to mitigate latent social conflicts in the suburbs of Paris and at the same time to serve as a driver of urban and economic development in the adjacent city of Saint Denis and its surroundings. The Parc des Princes, on the other hand was built in the 1960's as the home of the city's main club, in a conservative neighborhood. Both of these Parisian stadia functioned as landmarks in their respective urban landscapes, materializing several urban, political and social forces revolving around an iconic sports building. Thus a comprehensive assessment of stadia's urban impact becomes crucial for its design process, allowing us to accurately understand how its architecture directly influenced the building's possible urban legacy, financial sustainability, and lifespan. The results obtained by this analysis offer a contribution to a methodological assessment of stadia's capabilities to become an engine in the creation of a diverse and economically successful neighborhood. Instead of simply confirming stadia's scale dichotomy in relation to its context, the presented methodology aims to comprehend stadia's potential as a tool of urban regeneration able to create an urban sense of identity and celebration.

## **TALES OF TWO CITIES, TWO TEAMS AND TWO STADIUMS**

Dominic Sagar, Manchester School of Architecture

'MOTOR CITY' V 'KING COTTON'..... DETROIT CITY FC V FC UNITED MANCHESTER,.....KEYWORTH STADIUM V BROADHURST PARK

This paper chronicles the story that led to an amazing game of football at Keyworth Stadium in Hamtramck, Detroit, on 28th May 2016, where a community based football team FC United of Manchester, travelled 3,610 miles across the Atlantic Ocean to play a similar community team Detroit City FC.

This story parallels the similarities and spirit of the two cities, the two teams and the development of their stadiums. Detroit like Manchester has always been a big sports city, with the likes of the Detroit Pistons, Lions, Redwings, Tigers, their larger stadiums mirroring those of Manchester City and Manchester United. These grander more icon sports stadiums will be

referenced, their parts in the story of the two cities discussed. The role of the stadium typology will be studied and how they may act to help regenerate areas, or blight areas. The role of the corporates versus the community the Big Uniteds versus the Little Uniteds. Alongside this, the similarities of two cities industrial pasts, cultural connections and their passion for music will be drawn upon, along with their socio economic problems.

To many Mancunians just the name 'Detroit' conjures up magical musical imagery and to any petrol head Detroit and motors go hand in hand. Henry Ford even shipped a whole production line over to Manchester. [coincidentally the first Ford plant was actually on a street called Manchester Avenue in Detroit] 'The Line' was set up at Trafford Park, [Old Trafford, the home of Manchester United] from which out popped, as well as footballers, thousands of Model T Fords. The transatlantic connections of the two cities don't just stop there, they are myriad and now to boot, they now have a football team or is it soccer team, Detroit City FC, based on a similar community spirit as FC United of Manchester.

FC United formed when a rebel group of breakaway Manchester United fans set up a football team and eventually this rag tag bag of fans amazingly built their own stadium in a rundown area of Manchester. It's all been due to the fabulous commitment of the fans, volunteers and dedicated staff, their tireless efforts and expressions of love for their club, a community football club, a club for all, reaching out, making a difference.

Detroit City FC a club, coming from a plan hatched by community organisers to bring estranged struggling neighbourhoods together around weekly football matches; 'soccer' used as a vehicle to build community bonds, similar to FC United. Out of these numerous local teams, developed the need for a Detroit Football team Detroit City FC and again like FC United initially having to borrow a stadium and now have acquired and refurbished the abandoned historic Keyworth Stadium in Hamtramck.

FOOT NOTE :- The Author benefits from two recent visits to Detroit and was instrumental in bringing the two teams together and draws upon the experiences and observations.

## **THE STADIUM: ICONIC URBAN MASTERPIECE OR EXPENSIVE DESTRUCTOR OF CITY CENTRE SOCIAL COHESION?**

Mike Hall, Faulkner Browns

Stadia design has changed dramatically in recent years due in part to changes in health and safety guidelines and the emergence of new commercial opportunities. Unfortunately, this has led to many recent examples where stadia have become divorced from the social fabric of the cities they once served. This paper seeks to explore the role that surrounding social infrastructure and other enabling developments can have in binding the stadium typology back into the urban and social fabric of our cities.

# Open: The Stadium: Architecture, Urban Regeneration, and Politics (continued)

## URBAN PLAY: AN ARCHITECTURE STUDIO AS AGENT IN PUBLIC DISCUSSION FOR MINOR LEAGUE SPORTS IN A MEDIUM SIZED CITY

Marleen Kay Davis, University of Tennessee-Knoxville

The politics of sports scales to different communities. Sports is much more than a “game” and no where is that more apparent than studying access to sports, as a participant or spectator, along the spectrum of youth leagues to professional sports. Local government, in fact, negotiates a difficult terrain in addressing the needs of both sports fans and players. The local level must prioritize infrastructure demands for facilities, arenas, playing fields, parks, parking, and transportation access.

The premise of this paper is that, when strategically sited with a city, minor league sports could enhance a sense of community, could provide communal assets well beyond game days, could be a catalyst for other development, and could improve the economic well being of the city.

Youth leagues, regional schools, sports clubs, minor league teams, a flagship state university in the SEC, and a nearby county with a robust tourist economy, all compete for limited resources, limited infrastructure and a limited fan base. Decision-making is further influenced by the agendas of a county major, a city mayor, the university, a vibrant “creative class” committed to the revitalized downtown, a nearby African American community that seeks investment but is suspicious of gentrification, “the chamber” of business interests, the nearby tourist region with its lobbying efforts, property owners, not to mention the sports leagues, the teams and team owners themselves. Within the context of a low-tax state, the university, county, and city budgets strain to meet needs and priorities. A minor league hockey team plays in non-regulation and outdated facilities owned by the city and struggles to find a fan base. Since 1909, the local minor league baseball team has had a series of locations, names, and owners, including the family of the former city mayor and now governor. The current owner is the state commissioner of economic development.

The studio operated within these numerous conflicting political dimensions, and served as a sort of neutral ground for discussion and debate.

In the context of suspicion and cynicism about hidden agendas in local development, the work of an architecture studio can advance, if not direct, the public debate. As a premise, this studio determined it would investigate

potential sites for two different minor league teams (baseball and hockey) within a ten-minute walk of the city’s downtown. The teams are perceived as a community asset, located in the heart of the city, not in an island of parking or in a preferred neighborhood sector. As a challenge, the proposed use of the facilities extended well beyond the limited number of game days, leveraging the investment in facilities as a way to promote community use. The studio work was part of two different exhibits, reaching a broad cross section of interested parties, including the team owners. Part of the studio work was supported by outreach grant funding.

# The Fertility of Urban Ruins: Session 1

## **A MARGIN OF INDETERMINACY. REEVALUATING THE POTENTIAL OF RESIDUAL LANDSCAPES IN FUTURE URBAN DEVELOPMENT STRATEGIES**

Laura Pedata

This paper intends to reflect on the importance of landscape conditions, processes over time and change, particularly in transitioning countries like Albania, where cities are subject to fast urban growth and the proliferation of residual spaces, which result in antagonistic and confused landscapes - landscapes of mutation and crisis. Although residual spaces are a result of the rational organization of the urban territory, they have become the opposite of the organized world. Analyzing these landscapes at the micro scale we can learn from the natural order that shapes them and from the way the urbanized territory influences their existence; whilst at the macro scale they appear as scale less fragments, interruptions of the urban fabric that reveal a new geography. Their temporary suspension and availability to transformation – but also their unstable, dynamic, heterogeneous and chaotic character - generates an opportunity for designers to reframe the urban design discourse, acknowledging the value of indeterminacy and open-endedness. Residual spaces have the potential to become test sites for experimenting new urban landscape management strategies aimed at guaranteeing people's comfort and health, responding to social needs, and contributing to the restoration of degraded urban ecosystems and the preservation of the environment. Residual spaces can become the genesis for possible futures.

## **EMERGING FROM THE MACHINIC CITY**

Jeffrey Kruth, Kent State University CUDC

In the half-used and peripheral spaces endemic in postindustrial cities, latent potentials for the material and social reconstruction of urban life are possible. Uniquely positioned, key postindustrial landscapes in rustbelt cities offer the possibility to produce new forms of spatial legibility and distinctly local knowledge. In contrast to core dominant and global cities, rustbelt cityscapes are not beholden to purely market-driven agendas, affording the possibility of alternative social and ecological cohesions. This paper suggests that a new spatial and material legibility might be found in the contaminated, half-used, and vacant sites of industrial ruins. Beginning with an analysis of contemporary conceptual frameworks necessary for understanding the postindustrial condition, the paper traces the postindustrial construction of ecological and economic identities, largely using Cleveland as a preeminent case study. The paper suggests three conceptually rich sites and methods for intervention—the capsule, the corridor, and the reuse of material constructions. Each of these sites and methods suggest a cognitive mapping and the production of new local knowledge about the city and its construction.

## **LAGSCAPES: THE FLEETING OPPORTUNISM OF THE TRANSITIONAL URBAN LANDSCAPE**

Sean Burkholder, University At Buffalo, SUNY

The Great Lakes Basin is home to a large number of cities considered to be “shrinking”. This term is both negative and inaccurate in describing what is actually a unique phenomenon of land use fluctuation. However, the negativity and lack of precision that accompany words like ‘shrinking’ and “vacant” have generated a tremendous rift in any attempt to understand our contemporary urban processes as anything but problematic, and force our hands toward nostalgia-driven strategies of problem solving. Instead, this fleeting and precious moment of Lag should be used to undertake a much more inquisitive and opportunistic set of possibilities – before it is too late.

This paper looks at several recent projects and topics of research by the author that both work to better understand the true nature of the contemporary urban environment found in the Great Lakes Region and propose more inventive (and effective) strategies for engaging it.

## **SANDPIT URBANISM**

David Karle, University of Nebraska-Lincoln

Ranked among the oldest of technologies, the extractive industries involve the removal and processing of raw materials from the earth and their global-scale operations have transformed entire regions and markets. The term “urban ruin” will be used to describe a rural site of operation that services an urban- or infrastructural-scale agenda, and as Lucy Lippard describes, gravel mines are metaphorically cities turned upside down, though urban culture is unaware of its origins and rural birthplaces. Today, rural America is littered with evidence showing the country's former industrial prowess over the last two centuries, and many of these places (now abandoned) hold latent value for their transformation and reuse. The industrial legacy of Nebraska's sand and gravel operations provides an opportunity to balance resource extraction with a more complex understanding of ecological systems. In essence, these remediated pits are becoming catalysts for the fabric of isolated rural communities—a new form of urbanism. In a state without significant bodies of water, sandpit mines transformed into freshwater lakes have generated an emergent city growth pattern and constructed ecologies that mask the extraction process in rural Nebraska.

# The Movement to Service: Theory

## **FROM SETTLEMENT HOUSE TO 20K HOUSE: SERVICE AND LABOR IN AMERICAN DESIGN/BUILD EDUCATION**

Anna Gloria Goodman, Portland State University

This paper discusses how social engagement in the architectural profession fits within broader conceptions of American citizenship. To do so, it provides a historical account of American service learning in the Progressive and Depression Eras (1890s-1930s) and compares it to community-based design/build education unfolding in the current era (1990s-present). In so doing, it points out the ways in which educators in each period took a “pragmatist” approach to aiding the poor while promoting the involvement of youth in service learning activities. It argues that contemporary programs carry forward one of the key contradictions of the Progressive youth-labor model. Namely, they create a division between those who must perform hard labor to support themselves and their families, and those with the privilege of temporarily laboring for educational purposes. It concludes by pointing out how the tropes of “the frontier” and “self-help” frame student labor and reaffirm the profession’s value in times of social and economic crisis.

## **MOVING SERVICE LEARNING BEYOND THE STUDIO TO HISTORY-THEORY COURSES**

David M. Breiner, Philadelphia University

Service learning can be used to strengthen student learning outcomes in non-studio courses for architects, such as history-theory seminars. The author’s experimentation with assignments provides a foundation for this pedagogy. Institutional support, diverse student skills, willing community partners, and questionnaires have resulted in a variety of interdisciplinary, collaborative, active, and real-world projects. A decade’s worth of statistics and written student feedback clarify that service-learning projects helped to raise student performance and enthusiasm, in addition to the benefits that community outreach brings to the academic program and to the university.

## **REDEFINING HUMANITARIAN ARCHITECTURE WITH COMPLEXITY IN MIND: MOVING TOWARD A NEW PRACTICE**

James Miller, University of Oregon

Humanitarian architecture has become a mainstay in the social practice of architecture and has had an overall positive influence on design teaching. However, the field of humanitarian design has a tendency to oversimplify growing issues of social and environmental justice. The field of humanitarian architecture, suggests to students that design can solve systemic problems but fails to define the complexity of the systems these problems exist within. Rather than emphasizing critical analysis and deconstruction, it emphasizes flashy design. This paper establishes the basis of humanitarian architecture, the definition, and the key concepts that define the practice of humanitarian architecture, and it uses the concepts of ‘craft’ and ‘replicability’ to analyze the practice within complex systems. This analysis of the field makes the argument that incremental facilitation and deep community engagement is necessary for a successful humanitarian architecture. And in order to achieve success, a new school of humanitarian architecture needs to be developed that develops students and practitioners who are prepared to work within complexity, using praxis.

## **WHEN I HEAR THE WORD SERVICE I LOOK FOR A CRISIS**

Jeremy Voorhees, Temple University

The rhetoric surrounding service in architecture tends to prioritize the exceptional situations of crisis. Whether the aftermath of a natural disaster, the sudden outbreak of war, or the continued marginalization of a community, architecture is most confident in describing its capacity to effect social, political, and economic change in the most harrowing of circumstances. This paper describes the potential consequences of prioritizing these situations as the primary site of service architecture. It argues that employing Chantal Mouffe’s distinction between “us” and “them” might reconstitute a politically, socially, and economically engaged architecture in less polemic circumstances.



# Whither Public Space?

## 128TH STREET HARLEM: AN OPEN APPROACH TO SOCIAL INCLUSION

Ana Morcillo Pallares, University of Michigan

During the 60s in New York, the urgency of a solution to urban congestion was reflected in a socio-political proposal which launched a new concept for the generation and maintenance of new collective space. The proposal promoted a focus on small scale interventions and the recycling of abandoned lots throughout the city. The result was revolutionary as a formula of improving the inclusion of social diverse spaces and reducing the plague of poverty and pollution suffered by entire neighborhoods. Politicians, members of the Park Association of the city, architects, planners and philanthropists decided to focus on new ideas to deploy on one street which became an experimental field for new open space: 128th on Harlem. The progressive celebration of the public in New York cannot be understood without these first heroic prototypes that with limited resources were able to accomplish the goal of the social inclusion in the city. Looking at these past examples, one can reflect on questions about how the new interventions in open space deal with the true inclusion of social diversity, their funding, investment, maintenance, and the role of citizen participation in them. Are today's new infrastructures being thought by everybody and for everybody?

## THE DESIGNED “PUBLIC SPACES” IN SOLIDERE’S BEIRUT CITY CENTER

Garine Boghossian, Massachusetts Institute of Technology

The once historic city center of Beirut, now a shiny upscale district, is the result of an enormous real-estate privatization process that began in the 1990s, headed by the late prime minister Rafic Hariri. Under the pretext of reconstructing the Beirut City Center, destroyed during the 15-year civil war, Solidere, a private firm established by Hariri, took on the mission to realize the city's master plan following a neo-liberal model, with a capital investment of \$1.65 billion dollars mostly secured through foreign aid.

Designed and marketed towards a new elitist clientele, the city center—divided during the war between East and West—now separates the haves from the have-nots, catering mainly for tourists and the rich in the Gulf area. As such, the right to a city that was the meeting point for all Beirutis before the war, was seized, and a new island, detached from the rest of the urban fabric and its social context, was imposed.

“The Ancient city of the future”, Solidere’s mantra supporting its reconstruction agenda, emphasizes on public domain, conservation and heritage areas, followed by residential neighborhoods, souks, and new development areas. As part of its building narrative, Solidere promises the “growing community of residents, workers, and visitors” to create around 60 public spaces comprising of gardens, squares, and seafront promenades. This paper investigates the different public spaces listed on the website and reveals the design politics behind them. It argues against the privatization of the public realm, a process through which public spaces become assets for the real-estate, both in their aesthetics and function. Furthermore, and particularly in the case of divided cities such as Beirut, rather than acting as a mediator between different social and religious groups, public space becomes sterilized and depoliticized, as political leaders seek control over it.

## THE IMPROVISED VERSUS THE PLANNED: IN SEARCH OF PUBLIC SPACE IN PARISIAN SUBURBS

Pari Riahi, University of Massachusetts, Amherst

As part of a larger research project, this paper looks into the disjointed body of the suburbs that surround the city of Paris in search of markers of public life. Contrasted to a city that is well known for its public spaces, the Parisian Suburbs are notorious for their ubiquitous abundance of social housing, clustered around and dotted along transportation circuits, without much else to offer. The lack of multi-layered hierarchies of space between that of the individual dwelling units and the city, the open spaces that surround the suburbs and hold them are often underused stretches of land, incapable of fostering interactions or creating spaces amenable to public life. In an attempt to look for possible solutions to break the monotony of the collective spaces in the suburbs, the paper looks into and catalogues the five elements that form the built environment of the suburbs: towers, grounds, terrains vagues, facades, and Graffiti. It then focuses on the notion of ground, by suggesting hypothetical projects to be installed in specific sites in three adjacent suburbs in the North and Northeast of Paris. The paper presents a model of a research and design hybrid that aims at understanding and transforming an environment in order to create better public spaces through careful, phased operations.

## UMBRELLA PROTESTS

Jennifer Lee Michaliszyn, Wentworth Institute of Technology

Hong Kong's Central multi-level pedestrian infrastructure and vertical podium-tower morphology is well-known. The Occupy Central movement in 2011 to the more recent 2014 “Umbrella” protests in Hong Kong have been sited along and under segments of this pedestrian network. These events compel a reexamination of these elevated spaces, and whether these quasi-public spaces were appropriated as spaces of dissent, and figure a kind of “public” space that is more granular and individuated than some of the other, more formal “public spaces” in the city.

# Open: Materiality and Optimism

## ARCHITECTURE'S OPTIMISM FROM THE CRITICAL THROUGH THE CRUEL TO THE STRANGE

Andrew Santa Lucia, Portland State University

The place of optimism in the discipline of architecture has affected far more than attitudes of practitioners. By tracing a genealogy of architectural optimism from the Critical (modern function) through the Cruel (postmodern sign), the Strange offers the discipline both complexity and corroboration (customizeable contemporary). Although different in scale and implementation throughout history, the optimistic entanglement with the audience of architecture is underlined by participatory models that give up traditional control of the discipline's aesthetic and technical effects that caught stride during modernism's more egalitarian engagement with the world. By ceding certain disciplinary controls, architects found new forms of disciplinarity in creating terms of optimistic engagement with architecture.

Optimism is a contentious term at best, sometimes associated with concepts like hope, utopia and instrumentality. First, a key cultural difference between optimism and hope is that hope deals in particular goals/outcomes tied to a situation, while optimism is a form of proactive engagement with the future. Second, the history of the term utopia is more closely related to the idealism of a "future without a past," which differs from the real-time agency optimism offers. In regards to both hope and utopia, Aldo Rossi's critique of naive functionalism locates the problem of idealism in the concept of function during Modernism, as a stand in or replacement to the structure and formation of architecture as a cultural, temporal and social element with a past and potentially negotiable future. It follows that the scale of architectural instrumentality is precisely the interface between discipline and culture that must be engaged when delineating a genealogy of optimism.

This essay will (1) define optimism(s) architecturally and philosophically within modernism and postmodernism; and (b) develop a theory of optimism for contemporary architecture through examining existing or soon to be realized architectural projects and their relationship to Strangeness. In a more specific sense, this essay will look at scales of public engagement with buildings and their relationship to formal, aesthetic and technical effects to suggest how architecture's future is, was and might be tied into defining the terms of engagement with an audience.

## SALVAGED MATERIALS AND ECOLOGY IN ARCHITECTURE AND THE VISUAL ARTS.

Daniel Faoro, Lawrence Technological University

The author explores the development of cultural and social/political views of materials and objects as manifest in architecture and the visual arts. The religious prescriptions against mammonism, and political/economic theories of free markets vs. socialism are addressed by the author as having social implications regarding views of materials and objects. Movements in Art and folk craft are examined as they have common ground in the use of "found objects" yet differ in practice and in the abstract. The relationship to architecture is influential as examined in the work of practitioners who draw upon the arts for inspiration, use recycled products and thus redefine social acceptability of common materials. The author in conclusion examines the current impact the "environmental imperative" has had in the selection and views architects have toward materials.

## SLIP MOUNTED SINGLE POINT DEFORMED STRUCTURAL SKINS

Christopher J. Beorkrem, University of North Carolina at Charlotte  
Paul Stockhoff, University of North Carolina at Charlotte

Single Point Incremental Metal Forming (SPIMF) allows panels to be incrementally formed out of sheet metal into doubly-curved complex shapes using a robotic arm and a stylus-like end effector. SPIMF leverages industrial robots' precision and strength by gradually pushing the end effector into vertically supported sheet metal. This work was inspired by Anmar Kalo and Michael Jake Newsum's Incremental Sheet Metal Forming and CITA's Stressed Skins project. SPIMF examines how different materials, forming tools, and tool path generation methods impact the finished quality of completed pieces along with applications for the formed metal parts. Once an understanding was had of how SPIMF worked a focus was put on how to increase forming depth along with limiting the amount of bracing used to support the sheet during forming.

This paper will outline the variety of materials, forming tools, materials, and tool paths tested in the development of this process.

- Steel, aluminum, and annealed steel were explored as candidates to be formed. Aluminum deformed the least and offered the best surface finish. However steel's lower cost and ability to be welded more easily outweighed aluminum's benefits.

- Early iterations of the forming tool used a piece of ½" high-speed steel that was ground and polished. Later methods utilized a forming tool created from a ball bearing held in place with a magnet. The magnet maintains the position of the ball bearing at the end of the tool, but allows the ball bearing to freely move as it gradually pushes into the sheet metal.

- Four types of tool paths were created to explore the best process to form the metal with a high level of accuracy and repeatability. 1) The first tool path started with a surface that had been contoured followed by the arm tracing the contours. Concave surfaces were generated with ease using this method. 2) Stepped parallel finishing explored how a surface with both concave and convex surfaces could be created without having the arm engage the sheet of metal from both sides. 3) Exploration into how to get a tool to helix into the metal instead of stepping allowed for the smoothest forms to be created. 4) Lastly, a stepped contouring approach was studied, which allowed for a more refined surface than contouring, but the finish was not nearly as smooth as helixing.

Building upon this research, slip mounted single point deformed panels were explored as a method for producing a high-precision, low post processing structural skin system. To reach this goal a system of understanding how forming geometry influenced produced panels was created. From that point a system was made, which allowed for forming geometry to be created in a way that allowed the panels to be formed in a way that reduces spring back during the forming process.

SPIMF's investigation of material types, end effector refinement, and tool path generation, as well as its exploration into the function of formed metal as production infrastructure begins to highlight the best techniques and uses of incremental metal forming.

# Open: Materiality and Optimism (continued)

**WHEN NATURE STRIKES A STUDY OF BEETLE KILL IN AMERICA  
AND ITS POTENTIAL USE FOR MASS TIMBER CONSTRUCTION  
JASON GRIFFITHS, UNIVERSITY OF NEBRASKA-LINCOLN  
AUBREY WASSUNG, UNIVERSITY OF NEBRASKA-LINCOLN**

This paper explores the alternative methods of wood collection in respect to lumber provided by nature and its potential use for mass timber construction. Sustainability in terms of materials can be compared through a complete life cycle analysis, which factors in pollution, waste, resources, and energy required for manufacture. In comparison to steel or concrete construction, wood outperforms the competition and it supports the atmosphere through its natural cycle of growth. In addition to sustainability, wood can be recycled and reused as other building materials, decorative elements, biofuel, and landscaping products. Recovered and recycled wood in the use of new stick frame construction has been understood as undesirable, but when used in mass timber construction, it eliminates the need for pieces of the same length and the nature of mass timber allows pieces that may not be suitable for structure to be combined and reinforced.

An alternative source of wood is provided by natural disasters, such as hurricanes, earthquakes, and tornadoes. The extent of the damage determines a tree's use, but ultimately these trees are suitable in mass timber construction. In addition to natural disasters, diseases and pests can cause a significant amount of damage, ranging from mild affliction to mass destruction. Many diseases and pests have swept through the United States claiming species of trees since European settlement.

Beetles make up the largest order in the animal kingdom, with only 24 species of beetles active in the United States causing damage to trees. Bark and borer beetles are the most destructive, affect the heart and woody areas of a tree. America is currently experiencing an epidemic of Mountain Pine beetle, Southern Pine beetle, Ips beetle, and most recently the Emerald Ash borer.

The Emerald Ash borer is a highly invasive species and an estimated 34 million ash trees, in a 25 state area, expected to be removed and replaced by 2019. The mass timber industry has the opportunity to capitalize on this surplus of wood as beetles can weaken the it, making it unsuitable for stick frame construction. Beetle kill wood, until recently, has mainly been used for biofuel, decorative, and small scale hobbies. Alpine Timberframe and Design has worked with beetle kill wood in their construction of UBC's Bio-energy Research and Demonstration Facility and the Student Union Building, also at UBC. Euclid, along with the University of Utah, has been using beetle kill wood in a new form of mass timber construction called ICLT, interlocking cross-laminated timber, which uses no fasteners or glues. ICLT can be produced by any timber fabricator wishing to diversify their product without adding additional infrastructure. Mass timber construction, if using recycled wood, wood provided by nature, or the surplus of beetle kill, can become affordable for smaller scale projects and housing without the need to harvest virgin trees.

## The Fertility of Urban Ruins: Session 2

### AN URBAN MINING ECOLOGY - BUTTE, AMERICA

Bradford Watson, Montana State University

The process of extraction has a profound impact on the environment, transforming and disfiguring the land through the sorting of geological conditions that has resulted in the Anthropocene age. This valuing of the subsurface condition over the surface has a long history in this country as the vast resources present beneath us and the motivation to pull them to the surface are intimately tied to the urbanization of remote places. There are few examples anywhere else in the world that showcase the collision of unimaginable wealth and the new urban ecology of mass extraction better than Butte.

Butte, America, as it was known by many residents, was a world-renowned destination for mining nicknamed the "Richest Hill on Earth." The draw of wealth was so great that immigrants were often instructed, "Don't stop in America, go straight to Butte!" It was the existence of this vast mineral resource, in this particular place of the intermountain west in the late 1800s, that set the stage for Butte's urbanization and the trajectory for this new ecology.

Present-day Butte is the physical manifestation of over 130 years of mining. Its streets come with names like Aluminum, Gold, Platinum and the giant craters (the Berkeley and Continental Pits) on the northeastern edge of town are an ever present reminder of the geologic underpinnings of this community. At one point, there were at least 200 mine shafts puncturing the urban surface and integrated into the fabric of the city. The overburden from these shafts was scattered about the community and to this day has a significant role in shaping the city. Today over 660 million metric tons of waste rock are spread across the 25 square mile surface of the Butte Hill. To this day it is difficult to decipher whether the holes or the homes came first.

The history of extraction has created a wealth of resources, both the valuable material and the ability to reflect on its implications to the environment. But too often this resultant landscape is not seen as an opportunistic condition as well. If the sorting and remaking of the land was imbued with an agenda of place-making instead of mere efficiency or satisfying the minimum standards for safety, these highly disturbed places could take on a value beyond the residues of extraction. There is a prominent role for the designer in this equation. If we can engage these processes of excavation, sorting, and processing in creative and productive ways, the potential exists to turn what many see as a necessary and context-less evil into one of the most impactful and unique forms of place-making of our generation. Butte, Montana offers a unique case study to examine projective futures for a post-industrial ecology, one that does not see the evils of the past as something to hide or attempt to eliminate. Rather one that seeks to leverage the efforts of transforming a contaminated place for a new community; one that engages the environment of the future and the Anthropocene age.

### RUDERAL AESTHETICS

Sarah Cowles, University of Southern California

Ecologists use the term ruderal, from the Latin rudus (rubble), to describe disturbance-adapted species. Ruderal species embody the unruly, tenacious, and opportunistic qualities of vegetation. They are metaphorically paradoxical: indexing catastrophe and abandonment, yet conversely representing resilience and renewal. Ruderal species and processes are

engaged in a range of contemporary works of art and landscape architecture. In these works, ruderal species perform ecological, spatial, visual, and metaphoric work. This discussion draws together and critiques examples of how an aesthetics of the ruderal is constructed, both physically and metaphorically. This article outlines the development and projection of ruderal aesthetics in three parts: a review of recent literature on "the ruderal problem" in landscape architectural and ecological theory, an outline and critique of ruderal works in contemporary art and landscapes architecture, and speculation on the future use of ruderal species, forms and processes in post-industrial cities.

### SCRAP MASTERS! - WORKING WITH WHAT REMAINS

Nikole Bouchard, University of Wisconsin-Milwaukee

For thousands of years humans have experimented with various methods of waste disposal; From burning, to burying, to simply packing up and moving in search of an unscathed environment. Habits of disposal are deeply ingrained in our daily lives; So casual and continual that we rarely ever stop to ponder the big picture effects on social, spatial and ecological orders. Rethinking the ways in which we produce, collect, discard and reuse our Waste, whether it's Materials, Spaces or Places, is essential to ensure a more sustainable future.

The Great Lakes Region was once the industrial core of the country. Unfortunately, the territory has suffered from the Post-Industrial Period, leaving these vast lakes lined with "Rust Belt" Cities which have been stigmatized by the shifting populations and industries that have migrated elsewhere. In many of these scarred cities, Leaders are making impressive efforts to reinvigorate the urban core via programs that support the Good Food Movement, Adaptive Reuse and Urban Revitalization Projects.

The following paper presents three Graduate Thesis Projects, of varying scales, that propose to transform various types of Post-Industrial Waste into Wonder. Each Design Proposal carefully considers the architectural, cultural, economic and environmental issues that are tied to various forms of Urban Detritus. This Thesis Research and Work was developed through interdisciplinary collaborations between Master of Architecture Students and Stakeholders. Design Proposals addressed specific Waste conditions of Consumer By-products, Urban Vacancy, Adaptive Reuse and Landscape Remediation. Seen through an optimistic lens, these Post-Industrial environments present a tremendous set of opportunities. The following design proposals address local conditions with global applications for Post-Industrial Cities around the World.

Landscape Urbanism plays a major role in the way these Projects understand and approach Post-Industrial debris. Each Graduate Student conducted intensive research at the start of their Thesis to produce a series of maps and infographics that visually explained the Waste-related issues at hand. Simultaneously, a series of global and local precedents were analyzed to understand how other Designers have struggled with similar issues. Research and design focused on hydrology, infrastructure, ecology, landscape and urban form. Next Students synthesized the information they collected to develop imaginative Post-Industrial Ecosystems at the intersection of Art, Architecture and Landscape Urbanism. The following Graduate Thesis Projects propose to transform our ripe Wastelands into productive urban environments that remediate the Post-Industrial Landscape, provide educational opportunities and reinvigorate the "Rust Belt" City.

# The Movement to Service: Practice

## AT THE VITAL CENTER: THE SERVICE STUDIO X AT GENERIC STATE UNIVERSITY

Chris L Cospers, Ferris State University  
Paul W Long, Ferris State University

Although the report is now 20 years old, Ernest L. Boyer and Lee D. Mitgang's *Building Community: A New Future for Architectural Education and Practice* is the most current major report on the state of architectural education and remains a source of inspiration today. In *Building Community*, Boyer and Mitgang agree with previous Carnegie Foundation reports that "higher education as a whole has lost its direction, that it is no longer at the vital center of the nation's work." To address this deficiency, Boyer and Mitgang proposed seven goals for architectural education and practice, the seventh of which they termed "Service to the Nation." Although Boyer and Mitgang identified several examples of socially aware architecture programs (in the 1990s), they argued that "schools of architecture could do more...to instill in students a commitment to lives of engagement and service."

This paper revisits Boyer and Mitgang's report, in particular its admonition that architecture programs "should educate students for both confidence and caring—in service to the nation" and considers some of the critical reaction to that report. It then presents the work of the Service Studio X at Generic State University as a case study of an architectural design studio based on a service learning design pedagogy which has found innovative, low-cost ways to perform projects and engage students in the wider community despite omnipresent financial and time restraints.

## DESIGN-BUILD: SERVICE BEYOND COMMUNITY

Jason Griffiths, University of Nebraska-Lincoln  
Mackenzie Gibbens, University of Nebraska-Lincoln

"We're not just trying to help a community, but we're trying to deconstruct students' privilege. We're trying to get them to be better citizens, better community advocates, and to understand the complexity of urban areas."  
-Thomas Dutton, Miami University

This paper attempts to define the nuances of community-based services within design-build, and look at service-learning through the lens of variety of program drivers and course aims, including construction experience and a critique of academia. It then looks in more detail at a case study of design-build that pairs service and forestry within the Pacific Northwest.

It is important to understand the drivers of service and service-learning pedagogy within the scope of design-build. The practice of design-build within architecture pedagogy grew directly from community activism. The beginnings of design-build within the University can be traced back to John Ruskin at Oxford. It may be interpreted that Ruskin's influence in the Arts and Crafts Movement in Britain had an impact of his drive for community and social services, and therefore influences the inception design-build in academia. The model that we recognize as design-build today was first created by Charles Moore and the Yale Building Project, founded in 1967 and still continues today. From its origin with the Yale Building Project the core of design-build has been community service. Beyond community service, many University faculty aim to educate students on the concept of social justice and the philosophy that those who form the built environment have a duty to serve those who do not. As a result, may design-build projects work for those who are underserved by the design professions. This intro-

duces students to alternative, democratic design practices and supports civic awareness and responsibility.

This paper concludes by investigating a current design-build program based in Oregon that attempts to interpret the imperatives of design-build pedagogy in terms of the contemporary discourse on engineered lumber. This case study, titled "Emerge," is rooted in service, both for the students involved in the making of the project and for those who will use it in the future. It suggests that the issue of service is understood as a confluence of different conceptual frameworks that must engage immediate concerns of the physical context and the wider issues of ongoing advancement of recent developments in the construction industry.

The importance of service in architecture education has never been more apparent. As world sustainability issues continue to be at the forefront of concerns in the built environment, the importance of educating the next generation of designers and builders is obvious. Through design, we can also educate, inform, and influence the general public. Design-build provides a means through which to achieve these goals.

## Generating Discipline-based Community Impact through Academic and Student Affairs Collaboration

William C. Dean, State University of New York at Alfred State College  
Jonathan Hilsher, State University of New York at Alfred State College

This article examines the sustained regional community engagement of the Department of Architecture and Design and elaborates on the enhanced impact realized through collaboration with a student affairs civic leadership initiative. Analysis of the case study highlights best practices and a pathway to collaboration on course design, creative cooperation, and intentional partnership designed to maximize student learning and community impact.

## INTEGRATING AN ETHOS OF SERVICE INTO THE BEGINNING DESIGN STUDIO

M. Naomi Darling, University of Massachusetts, Amherst

Since Boyer and Mitgang's challenge to the architecture community twenty years ago, the need for "the talents, skills, the broad vision and the ideals of the architecture profession" is if anything, even more urgently needed. The current generation of student that is interested in pursuing architecture is very socially engaged and feels that the architectural profession is a means for them to make a positive impact on their communities through meaningful design. This generation is also very aware of ongoing climate change challenges and sees the built environment as one way to address climate change in a substantive way. The question for the profession in both practice and in academia, is how to best contribute to our local and global community.

This paper will describe the beginnings of work undertaken with undergraduate students enrolled in a liberal arts architectural studies major. I will describe a studio project designed for second year students taking their second studio in which we have partnered with two different not-for-profit organizations that serve through the education sector in Africa. Both of these organizations are interested in design services and the projects and collaborations have provided a platform to discuss the challenges of international development work.

FRIDAY

# Architectural Intelligence: Session 1

## **PULSA: THE ART OF NOVEL INTELLIGENT ENVIRONMENTS**

AnnMarie Brennan, University of Melbourne  
Jonathan Lovell, University of Melbourne

Most histories of digital design in architecture are limited, and begin with the initial investigations into artificial intelligence by the Architecture Machine Group at MIT during the 1960s, and end with a mention of the Evolutionary Architecture at the Architecture Association during the late 1980s and early 1990s. However if one was to examine many of the artworks created during this time, several artists were working with similar ideas, concepts, and technologies on artificial intelligence. This paper is a media archaeological of responsive environments in contemporary practice. It endeavors to discover the historical and theoretical genealogy of affective, experiential, collaborative work of emerging, contemporary, transdisciplinary groups such as UNITED VISUAL ARTISTS. It does so by revisiting some of the projects by the 1966 artist collaborative, PULSA: People Using Light and Sound Artistically. Both the historical and contemporary examples presented here serve as examples in which the discipline of architecture can expand and take on multi-disciplinary collaborations, and the experience of architecture can transform into one which more fully engages the human senses.

## **ROBOTS, CYBORGS, AND ARCHITECTURE**

Rachel Dickey, University of North Carolina at Charlotte

This paper seeks to examine the robot cyborg paradigm in relation to architecture and artificial intelligence. It asks, what knowledge might arise from the cross disciplinary study of the historical narrative of the robot and cyborg? The intent is to gain a broader knowledge of the technological evolution in architecture and provide a frame for designers and specialist in AI to understand these fields in a wider context. Referencing the birth of the robot and cyborg and exploring their significance from past to present, this paper strives to point out how these figures could help us question the status quo, reveal something to us about the world, or even address needs we never even knew we had. Through the suggestion of a collective non-human form of intelligence in architecture we can ask, what might the machine have to offer that we haven't considered or weren't even capable of considering? How might machines actively collaborate in the design process? How might our relationship with technology enhance our creative capacities? The response to these questions begins with a comparative investigation of approaches to architecture and AI.

## **STRANGER THAN FICTION: ARTIFICIAL INTELLIGENCE, MEDIA, AND THE DOMESTIC REALM**

Galo Canizares, The Ohio State University

“The best way to predict the future is to invent it.” - Alan Kay

Alan Kay's famous soundbite from a 1971 Xerox PARC (Palo Alto Research Center) meeting presents a bizarre chicken and egg paradox. It goes like this: which came first, the science fiction representation of the object or the desire for specific objects themselves? In other words, is the plethora of technological advancements a direct result of anthropomorphic inevitabilities or are we simply trying to realize objects, vehicles, and environments we saw in science fiction representations in the mid-twentieth century? In this paper, I will argue that media and literature are equally as responsible as engineering for our current architectural reality. With the rise of Web 2.0, advances in graphics visualization, and their attendant cultural shifts, aspects of contemporary urban life increasingly resemble a science fiction. The pervasiveness of app culture and recent factual and fictional examples of artificial intelligence augmenting the built environment suggest that engineering advancements exist as part of a tight feedback loop between consumer expectations—largely influenced by Hollywood—and scientific discoveries. Therefore, in order to fully understand, historicise, or speculate on the future of interactions between humans and machines, we must first unpack the cycle of fiction-to-fact that typically occurs. Taking the domestic realm as an example, we can identify a series of uncanny, artificially intelligent, technologies which reflect human desires for subservience, assistance, and interconnectedness. Here, AI will serve as a case study through which to analyze the effect of fiction on scientific advancements and their subsequent dissemination into the consumer world, ultimately constituting a history based less on fact and more on media, image, and variable levels of reality.

# In Practice: Historicizing Responses, Reformulating Questions

## **BREEZE BLOCKS: DON'T CALL IT A COMEBACK**

Lance Walters, University of Hawaii At Manoa

An anachronistic and uniquely resilient building element, the humble breeze block is one of the last construction elements to resist the forces of globalization by its own design merits. The highly functional and aesthetic concrete blocks being used in construction today are a direct and uninterrupted link to the mid-century architectural movement that popularized them over 60 years ago. Despite that legacy and a superficial uniformity, breeze-block carries deep rooted regional nuances and local, material driven taxonomy. The commonalities shared in production, material and utility have all contributed to the success and the neglect of this uniquely brandless building product. This research proposes that new tools and materials can allow designers to revive both the geometric and environmental merits of the original breeze-block.

Though known by a variety of names breeze-block is still the most common term for this specific type of block which was originally a trade-specific, technical synonym for the broader building element known as the Concrete Masonry Unit (CMU). However colloquial the term is now, "breeze" is actually a homonym. These standardized, modular products are made of cement, aggregate and ash- the industry standard term for which is breeze. While still accurate and descriptive of the building product, the use of "breeze" today is an appropriation understood to refer to the behaviour rather than the material of these blocks, which have large patterned openings, allowing air to flow (a breeze) through them.

At once a locally specific and globally prevalent building element, only a few, similar designs are available today, yet historically the breeze block has hundreds of variations, each tied to regional aesthetics, material performance and utility. The stagnant aesthetics of the block used today in large part due to the success of its many original iterations. The historical, material and performative considerations that drove the block to popularity and that have contributed to its continued prevalence have also kept the block unchanged, under explored and largely unnoticed. Low construction and material costs, high functionality, and longevity have created a highly static design product even while architecture and design demands have evolved considerably.

This project reflects on the historical context embedded in materials, manufacturing techniques and analysis which allow designers to re-engage the original, underlying design conditions that propelled the first breeze-blocks into popularity. The same things that made the block work so well in the 50s- ease of mass production, expense, ease of construction- are no less relevant than the blocks themselves are today, providing a huge opportunity to study and understand what can be achieved with contemporary tools and materials. This project revisits the performative and aesthetic possibilities that lie within this lasting building component. Care, thought and consideration by a new generation of designers with access to new technology and materials may be able to revive the original merits of this resilient building element.

## **GEOLOGIC TIME IS NO LONGER SLOW TIME: RAPID CLIMATE CHANGE AND THE ARCHITECTURAL SITE**

Erin Moore, University of Oregon

Iryna Volynets, University of Oregon

In this era of rapid global climate change, landscape changes that once occurred in geologic time scales are now occurring within the lifecycles of buildings. Global surface temperatures, weather patterns, and lake and ocean levels are changing quickly and unpredictably. This new architectural context raises questions about existing practices in site-responsive architectural design: What are new ways of thinking about design that can account for both the geological history and the geological future of a given site? What is site-responsive design for sites with uncertain ground or climate? What are new theoretical frameworks for design thinking that offer insights into relationships between the built environment and the history and future of the global atmosphere?

Since the Mendenhall Glacier Visitors Center was completed in 1962, the Mendenhall Glacier has retreated nearly 1.75 miles, leaving a large lake between the visitors center and the glacier terminus. Glaciologists predict that within 100 years the Mendenhall Glacier will be gone. In this paper, we use the design of a new visitors center for the Mendenhall Valley, one that curates the recent past and that anticipates enormous change in the near future, as a practical case study in the role of geologic time in architectural design.

## **THE HEATED POSITION: SOME METHODS IN QUESTION**

Andrew Cruse, The Ohio State University

During the twentieth-century, thermal comfort has come to be considered an objective truth, determined using the scientific method and achieved with technical means. Following Joseph Rykwert's inquiry into the symbolic dimension of seated comfort, this paper examines the cultural dimensions of thermal comfort. A nascent yet growing awareness of thermal comfort is reflected in contemporary architecture culture. This increased attention is in part driven by a heightened awareness of global climate change. Changes to the weather, and the resulting impact of local ecosystems, sharpen our awareness of temperature and comfort. Architects are using comfort as part of design strategies informed by old accounts and current events. By engaging with historical notions of comfort to propose contemporary projects, they are expanding the relationship of the present to the past. In parallel, historians are looking at the past through a contemporary lens, seeking to trace the ephemeral experiences of comfort and how they are aligned with larger social and cultural shifts. Although exchanges between design and history on this topic are irregular and episodic, thermal comfort intertwines them in mutually-beneficial ways such that the line between historical consciousness and design imagination is blurred.



# Architectural Intelligence: Session 2

## **A BRIEF PRE-HISTORY OF HOUSES WHO TWEET**

Fred Scharmen, Morgan State University

There are currently only a few houses who use social media. But with the increasing availability of inexpensive hardware, and prolific networked software, the number of houses who actively communicate online in one way or another is sure to grow. An examination of some tweeting house types from within the context of architecture history and theory reveals some models for how this social architecture might develop. This paper shows that tweeting houses raise concerns that are solidly within the set of questions traditionally addressed by architecture. The tweeting house's existence depends on acts of translation between different media, some managed by a designer, some automated. The tweeting house actively presents social and tectonic affordances that offer opportunities for engagement, functional and otherwise. And finally, tweeting houses raise issues about the public, external representation of a set of private, internal conditions, some of them personal to the house's occupants, some of them intended for broader reading. This paper will use examples from the history of architecture, adjacent design disciplines, computer science, science fiction, and hybrid example projects that partake of all of these fields, to show that while the house with a social media account is a unique and new techno-architectural possibility, it is not without history or precedent.

## **ARCHIE\_NN: A GLIMPSE INTO THE FUTURE OF ARTIFICIAL INTELLIGENCE IN ARCHITECTURE**

Kellan Cartledge  
Lori Summers

This paper will provide a brief introduction of artificial neural networks, share research using neural networks to create Archie\_NN which is an artificial intelligence that writes architectural theory and criticism, describe the ArcNet architectural recognition database being created to advance research using artificial intelligence in architecture, and speculate about the looming veins of research and potential implications to the practice of architecture using artificial intelligence..

## **DESIGNING AMID THE INTERNET OF THINGS**

Saleh Kalantari, Washington State University  
Mona Ghandi, Washington State University

Current advancements in information technology and mechanical components offer incredible new possibilities for innovation in architecture. Many aspects of our physical environment are becoming integrated with information systems, a phenomenon that has been referred to as the "Internet of Things." The implications and applications of this technology are far-reaching, and students who are learning about design in today's environment have a bewildering array of new tools available for their exploration. This paper reviews some of the central concepts of contemporary data-driven design, and describes how these concepts can be used in a pedagogical framework to encourage student innovation. The authors provide details about their work with students in [eliminated for the purpose of blind review] Studio, and highlight some of the innovative design solutions created by students using information-based toolsets. This research provides a pedagogical framework for helping design students to engage with new technological resources as they work to develop the architectural intelligence.

## **READING THE LOGISTICAL SURFACE**

Jesse LeCavalier, New Jersey Institute of Technology

This essay considers the implications of robotically driven logistical architectures to explore the implications for the built environment when humans can no longer understand the spaces they have created. It looks at Amazon Robotics and Kiva Systems to argue that the technology presents a profound shift in understanding objects in space for the ways that it undermines centuries of Enlightenment ideals of order and taxonomy. Through connecting Norbert Weiner to some of the literature that he invokes, the essay considers some of the implications of these technologies while also suggesting ways that design can operate.

# In Practice: Material Manipulations

## **ANALYZING ARCHITECTURAL TYPES AND THEMES AS A DESIGN STRATEGY**

Felix Martin, RWTH Aachen University

How to draw inspiration from historical architecture as a contemporary architect is an ever-present subject in architecture theory. Contemporary architects can now look to a rich pool of concepts on how to refer to historical architecture in their designs. Despite such methods being applied and taught by certain practices and schools, major parts of architecture nowadays are focused on uncontrolled growth, repetitive usage of details and signature shape-making. In order to contextualize architecture again the use of historical analyses as an actual design method is worth discussing. The aim of this paper is to present such a method, by re-introducing the analysis of architectural types and themes as a possible way of inspiring the design of contemporary buildings. Despite an intense discourse on architectural types from the 1960s to the 1980s, they are nowadays often used merely to classify the function of a design project (residential, public, etc.). This notion ignores the complexity of the concept of types, therefore types and themes will be discussed as a mean for increasing the plausibility of a design scheme. Afterwards, their application will be shown in three of the author's projects.

## **EPHEMERAL BODY OF ARCHITECTURE**

Berrin Terim, Clemson University

The metaphorical relation of body and building is the fundamental concept of architectural theory that can be tracked through the history of architecture. Mostly highlighted in the theoretical works of early architects, this notion is always associated with the material presence of the built work, as if it is already executed. Both sides of this analogy, therefore are regarded on an object sense. However, every building practice, during the construction process, involves another sort of material presence, which is the "negative" of building, for instance; formwork, mold, guidelines, etc. The process of such making, which does actually require the involvement of the body itself, has not been studied through this glance though. This paper aims to present a theoretical framework that sets a metonymical relation between body and build-ing, as an act. Through a close study of Zumthor's Bruder Klaus, it argues for a possible theoretical connection between the human body and the negative of the building, which can only be enacted during the process.

## **SAFETY NOT GUARANTEED: THE FUTURE OF DEFENSIVE ARCHITECTURE**

Ashley Bigham, University of Michigan

As an alternative to the term defense architecture, a category which typically refers to forms and types (fortresses, citadels, bastions, urban walls), this paper proposes the idea of an architecture of defense. An architecture of defense sees all of architecture as a reaction to some measure of paranoia. It is possible that an architecture of defense runs so deep within the genetics of the discipline of architecture that it is the silent companion of contemporary architecture; it is the water in which we are swimming. This thesis was used in the development of a research design project entitled Safety Not Guaranteed. The project envisions a possible design future for the American suburb in an increasingly fortified world. Based on historical research on the role of architects in the formation of defense typologies, the project speculates on the role that technology, surveillance, and fear continue to play in creating the possibility of even more extreme new typologies of defense, including conditions latent in the mundane neighborhoods of suburbia today. It studies the built environment to recognize measures and methods used to subdue those fears.

Architecture is inseparable from defense. At its most primitive, architecture is defense against an environment. For hundreds of years, defensive civic architecture for wealthy sovereigns drove the discipline through the design and construction of countless fortresses, castles, palaces, villas and city walls. The design and construction of these defense systems was among the favored topics of early architectural treatises. Thus, from its most primitive and revered "origins," architecture was rehearsed in environments of conflict. This work highlights the tendencies already found in the discipline of architecture that suggest possible futures based on an existing culture of defense. Fortification today occurs on the scale of the front door, the home, the cul-de-sac, the neighborhood. Our homes project fear with increasingly exaggerated features, figures and postures. We face the rear, abut neighbors with fences, stand erect toward the street, and expand toward the backyard. We are entrenched.

# In Practice: Material Manipulations

## **YOU CAN TOUCH THIS: TEMPORALITY THROUGH MULTISENSORY ARCHITECTURAL REPRESENTATION**

Seher Erdogan Ford

Architects typically consider time to be a threat to buildings. This outlook stems from a lack of control over the effects of use, the elements, and changes in a building's physical and sociocultural context. As a result, standard modes of architectural representation lack the conventions and tools to address the dynamic effects of time, whether in the past or future. This paper proposes that the emerging technologies of virtual reality and haptics—the transmittance of tactility and physical sensation—are well suited to enable the expression of buildings in flux. Given the ability to enhance visual representation with virtual environments and tactile information, architects will be better able to convey, study, and synthesize the temporal scale in both the documentation and design of buildings. As a strategy to test the implications of this “temporal-friendly” representational approach, I study architectural heritage sites with complex and messy histories. To gain insight into what it would look and feel like for architects to depict time relative to buildings via new representational technologies, I explore historical examples of analog visual media that have been used or manipulated to convey temporality. While limited in their ability to express change and gradation, these historical precedents offer the basis for using tactility in architectural representation to create tangible readings of time. It is also useful to look to fields beyond architecture for other strategies of representing the physical relative to time. Examples from anthropology offer compelling ways of dealing with the materiality of artifacts across vast scales of time. Recent methods used in the digital reconstruction of architectural heritage sites exemplify how strategies from historical analog media provide useful cues on how to render multisensory experience in a nuanced fashion and how to reinforce the relationship between tactility and temporality. Through the case study of a specific heritage site in present-day Istanbul, Turkey—the Studius Church / Imrahor Mosque—whose physical layers manifest its complex and layered histories, this paper argues for two key strategies for representing time relative to buildings. Firstly, architectural temporality must be portrayed not through a series of “snapshots” but along an expansive continuum of change. Secondly, visual information must be supported by tactile input to surpass the strict limits of photorealism. Both of these aims are achievable in virtual reality environments supplemented by haptic technologies. In this type of a multisensory setting, the body can perceive its relationship to the various incarnations of the Studius site and explore the full depth of the building's cultural heritage. Buildings change over time, in a variety of ways and for a variety of reasons. Emerging technologies that enable the representation of architecture along the temporal axis and that are endowed with tactile qualities will only bolster architectural research, representation, and design. The effects of time past and future on buildings can never be fully known, but new technologies and media that leverage the virtual and the haptic can only help paint a more complete picture.

# Open: Typology as Climatic or Philosophical Response

## ADDRESSING CLIMATE CHANGE THROUGH WATER LANDSCAPES IN INDIA

Alpa Nawre, Kansas State University  
Carey Clouse, University of Massachusetts, Amherst

The escalating problems of water scarcity and urban flash floods are only expected to get worse under the joint pressures of urban development and climate change. In an effort to better understand these challenges in the South Asian context, this paper surveys four simple water management landscapes currently used in India: the talaab system, the ghat system, artificial glaciers and snow barrier bands. Talaab are man-made ponds that capture and store monsoonal water for use later in the year; ghat are stepped edges of rivers which prevent riverine flooding; artificial glaciers store glacial meltwater as ice for use in spring; and snow barrier bands divert snow into high mountain watersheds so that the meltwater will become usable during the warmer months of the year. This research is based on both direct field studies and archival document studies, conducted during the course of the past three years. In considering these four disparate approaches to water management, one can better understand the wide variety of design decisions, implications for climate-adaptive planning, and opportunities for more widespread use that these examples offer.

## RECONSIDERING MODERNISM: THE (IN)EXCESS(ABLE) ARCHITECTURE OF ALTERSTUDIO'S SIX HOUSES

John Reynolds, Miami University

The (in)Excess(able) experiences of six Alterstudio houses advance an alternative ethic of restraint that resists an excess frequented by contemporary architecture theory and practice. Rather than pursuing the ecstatic or superabundant as suggested in the Latin root *excessus*, (in)Excess(able) architecture is largely absent of signification. Instead, it focuses on visceral experiences of a fundamental nature that can be known, understood, and felt that arise from contact with things and the memories and associations brought about by their making. While akin to excess in its departure from custom and reason, the (in)Excess(able) architectural trajectory diverges to reveal the simple, humble, and ephemeral as discovered in nature, in things, and in ourselves. Echoing Luis Barragán's call for an authentic architecture created in "a sublime act of poetic imagination",<sup>1</sup>(in)Excess(able) architecture manifests itself in the serene and intimate where despite the profession's antipathy towards the term, beauty enters. Beauty in this sense is not an arbitrary set of aesthetic standards or tastes, but an attempt to reveal what Peter Zumthor would refer to as architecture's hard core. Discovering this core presages a sense of well-being that perhaps is best expressed through Dag Hammarskjöld's deeply held belief that "We all have within us a center of stillness surrounded by silence".<sup>2</sup>

This article explores the prospect of (in)Excess(able) architecture through the lenses of six Alterstudio houses, their values, and the questions they pose such as How should we live? and How should we build? While avoiding pretense and prescription, the six houses remind us of architecture's capacity to render us as our ideal selves and explore architectural beauty as a material articulation of certain ideas of a good life as a vision of happiness. Situated apart from excess, this pursuit of happiness results from seeking the enduring values we want to live by that transcend mere appearance. While avoiding nostalgia through a critical response to their region and its vernacular forms, the (in)Excess(able) architecture of the six houses

revisits the values and experiences of the mid-century modern house with emphasis upon its honesty, ease, and lack of inhibition realized by means of tectonic expression and a redefinition of inside/outside and public/private relationships. As such, the (in)Excess(able) architecture of the six houses advocates a uniquely American sense of *Wabi-Sabi*, where the big gesture is avoided and "expressive reticence is consistently prized above and against the gratuitous manipulation of form"<sup>3</sup> while still evoking a faith in the future and ourselves.

## THE GLASS LIBRARY: A RETRO-PROSPECTIVE

Amir H. Ameri, University of Colorado Denver

In tandem with the protracted debate over the ramifications of the digital information technologies for the library, there has been a surprising surge in the construction of new libraries over the course of the past twenty-five years. The overarching intent behind these new libraries has been to address the specific demands and challenges of the digital age. However, the responses have not been merely programmatic and functional, or for that matter technological in nature. In these regards, old and new libraries alike have responded and adapted in like manner. Yet, in stark contrast to the punctured masonry frame of traditional libraries, what distinguishes the majority of the new libraries is their appearance as articulated volumes clad often entirely in glass. This has led at least some observers to conclude that "regardless of who designed these libraries," they "share one characteristic: relatively few of these schemes look like libraries" (Mattern 2007, 82).

Why for the last two and half decades "permeability and transparency" of the library's exterior envelop (Dunlap 2002), has been considered a requisite virtue, and not so in the many preceding decades, is the focus of this paper. Given that there is no overt programmatic, functional, or technological correlation between the incorporation of digital information technologies and the aesthetic desirability of the display-case (vitrine) approach to the outer envelope of the library, this essay examines the overlap as an ideational rather than a technological response to the unique conceptual challenges of the digital information technologies.

The paper points out that the measure of success and/or failure used by various critics in evaluating the new glass libraries has not been provisions for the effective deployment of the digital media in the library. Rather the measure has been the degree to which the outer enveloping form of the library is correlated with and reveals the library's inner disposition. The culprit for the deployment of this specific measure is - the paper points out - the virtual text that brings to surface certain culturally unsettling aspects of writing that the analogue age had carefully kept under wraps within the cover of the book, inside the confines of the library. Unlike the analogue text, the virtual text offers no correlation between its temporal appearance (the screen) and its indiscernible spatial presence (the digital media). What it presents is a spatial and temporal dislocation and dispersion of appearance and substance that the library for the "electronic present" is critically asked to recompense as the measure of its aesthetic success. The less the "electronic text" is like the analogue text, the more the "library for the electronic present" is wished to offer, by way of substitution and supplementation, what the "electronic text" does not: a "perceptible correlation between the boundaries of the texts" and "the physical properties of the artifact" (Nunberg 1993), i.e., between appearance and substance, or else outer-form and inner-content.

## Open: Emerging

### **CREATING-MAKING WITH EMERGING TECHNOLOGIES: EDUCATIONAL PERSPECTIVE**

Andrzej Zarzycki, New Jersey Institute of Technology

This paper discusses the role of prototyping as a vehicle to integrate electronic media technology, materiality, and physical computing into architectural design process and education. It connects a creating-making approach to a broader maker and hacker culture through adaptive and autonomous assemblies and embedded electronic systems. It recognizes the need for a new conceptual discourse on what constitutes effective design methodology that nurtures innovation and considers all design factors: social, cultural, and technological.

### **DETROIT COLONY**

Joseph M. Godlewski, Syracuse University

This paper focuses specifically on the seminal scholarship on French Casablanca by anthropologist Paul Rabinow and historian Gwendolyn Wright and research on colonial exhibitions by political theorist Timothy Mitchell to critically reflect on the architectural interventions and representations of contemporary Detroit. Rabinow and Wright saw colonies as “laboratories” of spatial experimentation while Mitchell argued colonialism divided the world into two: one part exhibition, one part museum. After a close analysis of this work, the paper adopts a postcolonial perspective to conceptualize contemporary Detroit as a colony- an exotic zone of experimentation and creative license necessary for the maintenance of architecture disciplinary identity. It’s argued the importance in studying these forms of colonial architecture is not simply provide a more inclusive understanding of architecture or to lament the stereotypical racist representations of colonies in built form, but to underscore the operationalization of difference at particular, situated historical moments. As Edward Said pointed out, “My whole point about this system is not that it is a misrepresentation of some Oriental essence...but that it operates as representations usually do, for a purpose, according to a tendency, in a specific historical intellectual, and even economic setting.” The postcolonial study of the colonial city is not a historiographic project which seeks to account for the subaltern subjects who live there, but one which is a necessary part of the understanding the mechanisms constituting the centered modern self. As such, this paper is not intended as a critique of the many well-intentioned creative projects in a city struggling with a number of social and economic problems, but a reflection on what role have these experiments had historically on testing new spatial technologies and the constitution of architecture’s disciplinary identity. It’s a provocation to think more critically and expansively about interventions on urban frontiers of many kinds. What are their potentials and limits? Lastly, this paper doesn’t take sides in the understandably heated debate between the organizers and participants of the “Architectural Imagination” exhibition and the members of Detroit Resists. Instead, it sees these two positions as fundamentally different approaches to imagining urban futures consistent with a much longer historical arc of colonial urbanism. This speculative paper aims to historicize and contextualize seemingly new experiments in architectural and urban form in Detroit using two seminal case studies.

### **ENABLED USERS AND CROWDSOURCED CULTURE**

Andrzej Zarzycki, New Jersey Institute of Technology

Apparently unrelated phenomena such as video game mods, a re-appropriation of the public realm by the hacker culture, and makers tinkering with everyday products point to a new social agreement that is in the process of redefining a current social fabric, culture and the environment. This paper looks at the legacy of the technology driven culture on a new attitudes toward the definition and ownership of the public realm and role we play within.

### **NETWORK STRUCTURES AND EMERGING URBAN FORMS**

Gernot Riether, Kennesaw State University

In the Internet age networked structures have become the organizational model of cultural and technological production. A network is an abstract organizational model in its broadest sense concerned only with the structure of relationships between things, be they objects or information. Social networks that resulted from technical infrastructure have generated new categories of public commons. In the last twenty years the increasing emergence of telecommunication networks and the understanding of network structure in relation to space have situated network forms within the discussion of future urban environments. Many questions arise by thinking about how these networks inevitably affect almost all of our daily activities.

# In Practice: Urban Context as Design Strategy

## FROM NOLLI MAP TO TIRANA HIDDEN. HISTORICAL FICTION AS CONTEMPORARY URBAN DESIGN APPROACH.

Loris Rossi, Universiteti Polis

This paper aims to explore how some fictions elaborated during the history of architecture can be applied as a methodology for a contemporary urban design approach. There are example in the history of urban representation that can become useful design tools for exploring new territories and theoretical paradigms. The contribution of this paper is based on a series of design experiments and speculations elaborated during Applied Research activities operated in Tirana (Albania). In this framework, and before addressing the main topic, two important arguments will be underlined to guide the reader:

- the first argument is that ideas drawn from history of architecture can become operative instruments only if reinterpreted through a theoretical and intellectual framework;
- the second one can be identified through the concept of workshop + exhibition as an effective practice in the field of applied research by design.

Following the two above mentioned arguments, I wish to underline the value of city patterns as speculative design methodologies, and introduce two fundamental historical tools, which are important to understand this paper: Nolli's Map of Rome (pianta grande di Roma 1748), seen in our case as an interpretative tool aimed at defining the meaning of a 'hidden frame'; and the famous 1978 exhibition Rome Interrupted, where Nolli's historical map was used as a starting point to operate design.

Both cases have been observed from many perspectives and investigated thoroughly before the workshop Tirana Interrupted was developed in September 2014, at POLIS University in Tirana and later, in January 2015, at the UCLA the Department of Architecture and Planning in Los Angeles. The concept of these workshops draws inspiration from one of the most important moments in the history of Rome, in 1978 when 12 architects invited by Giulio Carlo Argan and Piero Sartogo started working on the famous exhibition entitled "Rome Interrupted: 12 Interventions on the Nolli Map of Rome".

The main objective of the exhibition was to erase two hundred years of history characterized by speculation, thus reconfiguring an image of Rome starting from the plan drawn by Giovanni Battista Nolli in 1748.

Based on the above mentioned experiences, this paper explores the value of Tirana's urban texture considering its uncontrollable inclination to develop through spontaneous processes, repeatedly interrupting the main unitary vision of the city.

To inspire the future means to create a new urban paradigm in which the city is no longer conceived through a unique design action, but rather through apparently separate fragments connected by an underlying hidden frame – a hidden frame can be visualized through an act of interpretation whereby, using specific methods of representation, it's possible to bring to the surface an image of the city yet to be discovered.

## CONDITIONING HISTORY: HERITAGE CONSTRUCTION AS DESIGN STRATEGY AND CATALYST

Gabriel Fuentes, Marywood University

This paper argues that under the assumption of 'authenticity', history - the recollection and recontextualization of artifacts and events of the past for the present - is not only an ethical problem of honesty and truth but also, and perhaps more importantly, an aesthetic problem of representation and power. As such, heritage construction practices - by which I include historic preservation, restoration, and conservation - operate in geopolitical tension between the ethics of truth and the aesthetics of counterfactualty, conditioning history within asymmetrical relations of power. To construct heritage, then, is not merely to represent the past but to design history as a site for architectural and urban practice; It is itself a design operation, strategy, and catalyst, particularly in old cities. In order to ground some broader thoughts on the aesthetics of authenticity and the geopolitics of heritage, I turn to Havana, Cuba (a UNESCO World Heritage site since 1982) as a case study; a city where heritage construction, globalization, and ideology intertwine with architecture and urban planning/design at multiple scales. Specifically, I analyze the collaborative practices of Havana's Office of the City Historian (OCH) - the only autonomous, non-centralized, capitalist entity in Cuba's socialist polity with the power to regulate, design, and develop heritage sites within Havana's old core.

## EPISODIC URBANISM: PEDAGOGICAL STUDIES AND THE LESSON OF ROME

Frederick Biehle, Pratt Institute

In spite of the previous century's abuse, Rome remains perhaps the most remarkable "library" of spatial experience in the world. The encounter with this city, foreign yet familiar, profound and contradictory, will inevitably question any students' design priorities. The studio work of Pratt Institute's School of Architecture in Rome has made a consistent effort to learn from the physical and perceptual discoveries that the city offers and in particular to engage and understand its figurative interconnectedness. The investigation begins not with Rome's principle monuments and familiar public spaces, but with an examination of several specific urban artifacts that coherently exhibit episodic linkages. Their spatial continuities will be emphasized as a critical value, in that it can empower the individual by virtue of recurrent opportunities for choice in the simple determination of one's way. These considerations are then introduced as implicit requirements in a hybrid design program to be located at the center of the historical city. In its entirety the project is intended to act as a mirror to the cumulative nature of the city's larger context- into which they will become integrated. Rome is the labyrinth into which each student will step. All that which has been familiar will soon be lost. To find a way out one must proceed with constant attentive curiosity. The city requires a different understanding as to place and orientation, reliant on coming to know the unique integrated relationship between an incremental part and a larger, not quite comprehensible whole. It is a knowledge that will be constructed cumulatively, but with it, each student can begin to build a bridge back to what they already know.

# In Practice: Urban Context as Design Strategy (continued)

## **NEW TERRITORIES FOR OLD ARCHITECTURE: NOMADIC HISTORY AS A DESIGN STRATEGY IN THE REDEVELOPMENT URBAN PROJECT FOR THE KADHIMIYA HISTORICAL SITE, BAGHDAD, IRAQ**

Najlaa Kareem, University of Cincinnati

The purpose of this paper is to explore how the possibility of using history as a dynamic, intensive force in an urban design thinking process can escape the historicism and representational image functionary towards a re-engineered creative historical/ architectural dialogue. By comparing two existing urban project strategies for the redevelopment of the Kadhimiya historical site, this paper will examine the difference between mimicking historical styles in a decontextualized manner and repeating them with difference using the theory of Difference and Repetition outlined by the French philosopher Gilles Deleuze.

This paper analyzes two different design strategies that architects and urban designers use to deal with history in renewal projects that have been submitted to an international-wide competition for the redevelopment of the Kadhimiya historical site. It will compare the historically conservative winning proposal by the Dewan Architects and Engineers Firm to another entry by the Assemblage Architects Firm. It may be said that the latter firm does not demonstrate as much of a retrospective and conservative use of history as the winning firm, but I will argue that it presents a more creative and prolific source in terms of future design, as well as a less detrimental approach towards the historic urban fabric. It will be shown that the Assemblage Architects' design does not use history in a reactionary or nostalgic way; "history as historicism," instead Assemblage Firm employs history in creative ways, blending with the present and future. The comparison of these two projects reveals different approaches of architectural reconstruction and preservation. Regarding the first proposal, by the Dewan Architects and Engineers Firm, it is argued that the formality of a "disneyfied" historical character has become "a string of actualities." The redevelopment design in the winning entry exists as an allusion. In contrast, it will be shown that the proposal by Assemblage Architects Firm applies a creative alternative detached from this predetermined method, the use of history in Assemblage's proposal will be beyond the artificial frozen-time image. In this research, the main goal is not to refute or confirm the static and fixated image of history that is proposed by the winning entry, but rather to scrutinize the way in which this representational image of history becomes operative and dynamic. This research is a critical analysis about a transitional and productive return of history, "a nomadic history." The term 'nomadic history' is coined by the Deleuze scholar Craig Lundy, which is a conception that has been formulated by Deleuze's logic of creation. This comparative paper will investigate the problem of representational thinking in architectural/ historical design practice and to what extent repeating the past produces sociocultural uniformity, or cultural difference.

# Is Another Architecture Possible?: Session 1

## **REMAKING THE CITY: THE OCCUPY MOVEMENT AND ITS URBAN RESONANCES**

Kevin D. Murphy, Vanderbilt University  
Sally O'Driscoll, Fairfield University

When people come together to occupy space in political protest, they lay bare their desire to claim that space in a fiercely intentional way: they are determined to shape it to meet specifically articulated community needs. Thus an examination of such protests, ephemeral though they may be, reveals a trove of information about the desires of a particular section of the community in relation to developing a new vision of public urban space. As such, these projects constitute “counter-hegemonic architectural practices” that resist the economics, aesthetics, and politics of urban building as it currently exists.

The Occupy Wall Street movement of 2011 in New York City offered an excellent example of what can be learned about the social priorities of the protesters: the ways they transformed Zuccotti Park (formerly known as Liberty Square), made clear what they considered the best uses of urban space when mobilized by the community at large rather than by a Wall Street elite. They created a library; spaces for consensus driven decision-making and educational discussion; food; sleeping places; a grey water recycling system; and art, performance, and entertainment – all offered regardless of one's ability to pay. Observers also noted an iconic style of visual and textual self-representation emerging from those protests – a style of representation that became a shorthand for the protesters' sociopolitical goals

We argue that the Occupy style of urban intervention was later adopted, in 2016, for the Nuit Debout protest in Paris where it confirmed that the self-consciously handmade, non-professional aesthetic of Occupy serves to convey a counter-hegemonic stance. The paper ends by questioning how professional architects and planners can make use of Occupy as a model for community generated design.

## **MEXICAN CIVIL SOCIETY ORGANIZATIONS: HOW THE PURSUIT OF FORMAL HOUSING UNDERMINES THE VISION OF A JUST AND EQUITABLE CITY**

Paulina Reyes, University of Michigan

In Mexico City, a robust network of grass-roots civil society organizations (CSOs) have all but transformed the shape of housing development within the last forty years. Since their inception during the student movement of the late 1960's, CSOs have emerged as leading advocates in housing reform on behalf of the poor, often acting as the sole mouthpiece for the interests of citizens who are otherwise invisible in the top-down project of city-building. CSO-led development has left an indelible mark on the urban fabric; that of irregular settlements, urban improvement projects, and numerous subsidized housing projects.

By their principles, CSOs are radical, empowering, and crucial to the welfare of Mexico City's poor. However, in the single-minded pursuit of formal

housing through the state, these same groups become complicit in producing a mode of urbanism which completely contradicts their stated ideological purpose. Realized housing developments instead divide, indebt, and individuate residents through an “apparatus of ownership,” a term I borrow from architect Ivonne Santoyo-Orozco. In her article of the same title, Santoyo-Orozco defines this “apparatus” as an ideological construct which enshrines ownership through a set of “interrelated aesthetic, economic, social, and political strategies”. Indeed, the logic of ownership is central to the conceptualization, promotion, and materialization of subsidized housing projects produced by CSOs. Even if they produce localized gains, at the macro, city-wide scale, CSOs do little to challenge the deeper impediments towards an equitable urban environment -- that of socio-spatial exclusion, marginalization, and mortgage-driven housing finance.

Based on my ongoing involvement with the civil society group, el Frente Popular Francisco Villa Independiente (FPFVI) as a case-study, this paper attempts to break down the gaps in civil society's aspirations of an egalitarian Mexico City, and its collective realization, acknowledging both its success at the local scale, and its failings in the eventual realization of state-subsidized housing projects.

## **SOCIAL JUSTICE AND ARCHITECTURE EDUCATION: DEVELOPING TOOLS FOR INCLUSION OF DISENFRANCHISED IMMIGRANT COMMUNITIES.**

Silvina Lopez Barrera

In recent years, social justice and community-based projects have been subject of increasing attention in the architecture education. In general, architecture studio courses focus on the traditional relationship between the architect and the client rather than the architect or designer's role encouraging social change. Socially engaged design presents an opportunity to engage students in “real world” learning, encouraging social change, strengthening communities, and contributing to the public good. This study explores a participatory design project involving the Architectural Studies program at Middlebury College, Migrant Justice, and Latino farmworkers in rural communities of Vermont. Latino immigrants represent a significant portion of farmworkers in Vermont dairy farms and many Latino farmworkers experience extreme geographical and social segregation and lack of access to basic resources. The goal for this participatory design project was to facilitate access to community resources among Latino farmworkers that were in isolated geographical and socioeconomic contexts in rural Vermont. The participatory design process empowered Latino farmworkers promoting discussions to design a mobile hub, which could facilitate resources for adaptation to their main social and economic challenges. This design project allowed students to expand their individual understanding of the world by carefully listening and exchanging with community members and their peers with different backgrounds and life experiences, fostering awareness of the role of the architect and designer as an agent to promote social change. Finally, this paper reflects upon the economic, social, and environmental challenges faced by Latino migrant farm workers, and it examines the challenges of the participatory design process that recognizes the variety of stakeholders involved, their cultural diversity, their social networks, and the complex relationship of power between them.



# Open: Urban Interventions and Their Consequences

## **DEGREES OF FAILURE: OPERATION BREAKTHROUGH HOUSING SYSTEMS IN KALAMAZOO**

Alex T. Anderson, University of Washington

In the early 1970s the U.S. Department of Housing and Urban Development funded a massive program to encourage industrialization in the production of housing in the United States. Operation Breakthrough, as the experiment was named, began with lofty technical aspirations, but it ultimately revealed the risks of experimentation with low-cost housing. It proved very quickly to be an embarrassing failure and could not demonstrate the marketability of factory-produced housing methods. Certainly, technical challenges contributed, but the experiment's failure had much to do with aesthetic and social factors. This paper highlights a small piece of the Operation Breakthrough experiment to help explain its inadequacies. In particular, it examines the work of two housing manufacturers, Levitt Building Systems, Inc. and Material Systems Corporation, which contributed houses to the prototype site in Kalamazoo, Michigan. While these manufacturers produced comparably scaled dwelling units, they took notably dissimilar approaches to design and production, and the fates of their efforts have proved to be starkly different.

## **FLOWERPOTS: OBJECTS OF MISUSE**

Suzanne Lettieri, University of Michigan

This paper will examine the radical behavior of discrete and contentious objects of urbanism in Detroit that perform as deviations of everyday objects. Through a series of examples analyzed through a discussion of object-thing theory, including art work and contemporary architecture, the paper argues that the intentional misuse of objects in Detroit may offer a framework to consider discrete, site specific, and architectural-scale propositions that interface urbanism and infrastructure.

The flower pot, an innocuous object, fitting comfortably both in the domestic and public realm, made national headlines in 2015, labeled as “controversial, divisive, and even racist.” The accused flowerpots measure five feet tall and are sited along the contentious border between Detroit and the wealthy City of Grosse Pointe Park; a border which has been described as one where “race and class collide...like nowhere else in the region, perhaps the nation.” Aside from the perceived aesthetic value, the flowerpots, once scaled up, function as disguised blockades, redirecting traffic away from the main point of intersection and serve to block views of Detroit's dilapidated buildings. Once detached from their original purpose, the flowerpots are no longer innocent, just as they are no longer everyday objects. More importantly when described in architectural terms; they are re-scaled, multiplied, and strategically positioned, and by virtue of their context, become discrete objects (parts) of a controversial urban strategy and worthy of more scrutiny.

When objects such as these stop behaving as they are expected to behave – flowerpots are expected to serve as vessels for plant life not as urban dividers – new interpretations and intentions emerge and consequently their performance shifts toward a new objective. Here, the articulation of thingness, or the transformation of objects to things, provides a useful

criteria: objects, imbued with conventional use, only become things when their usefulness is interrupted, and their subsequent thingness thrusts them into a reinterpreted role. This new role modifies its relationship between itself and its context, and is latent with the potential to adapt its role as an urban interface. In breaking down the methods by which contemporary architects generate things from routine objects, the intention of and rationale for employing misuse is revealed.

## **THE ROLE OF THE BANKS IN SHAPING THE IMAGE OF THE NEO-LIBERAL CITY: BEIRUT AS A CASE STUDY**

Roula El Khoury Fayad, Lebanese American University

With the rise of a global communication culture and new technologies, today's cityscapes have been systematically transformed into advertising and propaganda tools for the dominant economic and political powers. This display of influence is highly visible at the street level, on buildings, and in public spaces and is symptomatic of the neo-liberal city.

This paper presents a case study of the role of the banking sector in shaping the city of Beirut, investigating two aspects. The first is its instrumental role in financing the real estate sector and the construction activities within specific local circumstances and a wider global context in the early 1990's. The second is its contribution to the image of the city through the architecture of banks and associated symbols, signs and other forms of representations. The paper presents a reading of the new image of Beirut based on a comparative analysis of overlapping photographs and a recent photographic survey of the main streets. It will address the relationship of the banks to their surrounding environment as well as the perception of them held by users and inhabitants of these places.

In the conclusion, this paper confirms that the city fabric has been drastically transformed since the 1990's due to the eminent participation of the banking sector in the construction and the development of the city, thus questioning the future role of urbanism.

SATURDAY

# Branding the Underdog

## **LAFAYETTE PARK: IN-BETWEEN URBANISM**

Virginia Stanard, University of Detroit Mercy

Criticism of modernist planning strategies in the United States has prompted the demolition of superblock housing projects and the subsequent approbation of New Urbanism as a model for urban revitalization. Despite these trends, the Lafayette Park development in Detroit challenges and contradicts the presumed failures of modern architecture and urbanism. A paradox of city and suburb amidst the contested urbanism of Detroit, Lafayette Park's significance lies in its contradictions—the reification of Modernism's potential combined with the limitations of this vision. These contradictions have enabled the success of Lafayette Park, elevating it as a development model for Detroit's future.

## **RE-BRANDING POST-INDUSTRIAL LIVERPOOL: JAMES STIRLING, ADAPTIVE REUSE AND THE TATE**

Deirdre Hennebury, Lawrence Technological University

The Tate Liverpool, which opened in May 1988, is located in Warehouse “C” of the Albert Dock. Seen as a sort of homecoming for the architect who grew up in the city, James Stirling's adaptive reuse design is remarkable for its restraint and intense focus on the interior of the structure. Due to its Grade 1 listing, the exterior of the building was upgraded without altering its original essence. The galleries retain the columns and lower ceilings of the original warehouse which offers the consistent presence of the architecture in the enjoyment of the art works. Instead of distracting from the art, however, these elements assist in framing the works and focusing the visitor's view. In this way, the historical presence of the architecture remains along with the material traces of a lost way of life and economy. The story of the museum's construction involves a remarkable convergence of personalities, historical incidents, and the prevailing belief of the Tate that their work could act in positive ways in ameliorating their cities through architecture and urban considerations. While not a cure-all, the Albert Dock adaptive reuse marks an early moment of renewal that catalyzed other pockets of improvement throughout the city, culminating in Liverpool's selection and re-branding as the 2008 European Capital of Culture.

## **THE DERAILMENT OF DETROIT: PUBLIC TRANSIT AS A THREAT TO THE BRAND OF CAPITALISM**

Noah Resnick, University of Detroit Mercy

The disappearance of the Detroit Street Railway in the mid 1950's ushered in the demise of a functioning mass transit system in a city that had found such a thing to be obsolete. While this loss cannot be blamed for the economic, social, and spatial collapse of the city, neither can the reverse be said that the once largest urban network of streetcars in the nation was simply a victim of Detroit's ruin. When the last streetcar made its final run in 1956, the Motor City brand and the auto industry it nurtured were at the peak of their economic powers, and the high-water mark of the city's population. This paper will examine the factors that caused a large city to abandon its primary mass transportation system and build the argument that it was not the slow deterioration of a failing municipal amenity, but the result of an automotive branding campaign that defined capitalism by infiltrating the spatial, social, cultural, economic, and governmental mechanisms of the American city.

## **MARSEILLE BEYOND THE HEADLINES**

Claire Lubell, University of Waterloo

Marseille is a city with a tarnished reputation that it simultaneously embraces and denies. Like many post-industrial, second-tier cities, it is reinventing itself through a piecemeal regeneration process to create the image of a competitive global city. Ambitious projects funded largely by private capital, however, exacerbate the polarization of the city, and therefore the stereotypes which define its urban identity. This editorial essay, based on historical research, fieldwork and personal experience, draws a correlation between Marseille's multifaceted self-image and the evolution of its fragmented and contested infrastructural planning to explore the limits of the city's reinvention. As a once thriving port and hinge between a nation and its empire, Marseille's status as a destination has always been entangled with its duplicitous nature as a city at the end of the line - either a dead end or a point of departure.

# Design for Performance: Session 1

## **CARBON FOOTPRINT ANALYSIS**

Donna Kacmar, University of Houston

We have recently documented the carbon footprint of two buildings. Both buildings are new 300,000 square foot concrete frame office buildings in Houston, Texas commissioned by the same developer, built by the same contractor, yet designed by different architects. We tracked the carbon emitted from materials, workers transportation, energy use on site, and waste.

It is becoming increasingly important for designers to understand the implications of their material choices and this study helps clarify some of the results of design decisions.

## **PERFORMANCE DRIVEN STRUCTURAL DESIGN – BIOMIMICRY IN STRUCTURE**

Ming Hu, University of Maryland

Since last century one of the iconic dichotomy that divides architectural designers into two groups are performance and appearance. It is to our benefit to reconcile the performance-appearance debate and to provide an unambiguous definition of the related notions. And natural organism and system is a great model to follow. Biomimicry is the study of emulating and mimicking nature, where it has been used by designers to help in solving human problems. Biomimicry as an emerging field since late 1980s has been looking at advanced technologies derived from bio-inspired engineering at the different levels; however, the research of biomimicry application in the structure design field is lagging behind other design-related fields, such as product design and material design. The paper is to provide a framework to answer the question: How do we make biomimicry concepts practical in the context of structural design and from what key perspectives? And to address how performance and appearance could be blended into one and measured and verified as a whole.

This paper will address two important factors influencing structure performance: form-pattern making and the properties of materials. Numerous case studies will be used to demonstrate a variety of strategies corresponding to different levels of performance-driven structure design based on bioengineering. This paper aims to integrate material science and biology study into the research of architectural structure design.

## **THERMAL WORLDS: REDEFINING SPATIAL THRESHOLDS WITH TEMPERATURE IN THE GEOTHERMAL LANDSCAPE**

Catherine De Almeida, University of Nebraska-Lincoln

Space is typically demarcated by its physical boundaries. The solidity of wall, ceiling, and floor define architectural interiors. Space in the landscape, though structurally similar, is bounded by larger-scale material conditions, such as tree canopies, horizon, sky, and ground. How can architectural space be defined without architectural materials? As a proposal for the use of temperature as a space-making material for design, this design research project draws from philosophy and phenomenology to understand the body as an instrument for sensory experience, and architectural case studies to redefine the notion of physical, visually perceived space and ways intangible experiences are at the forefront of a design. It investigates how the manipulation of geothermal water can unlock the performative, ephemeral, and experiential characteristics of temperature as a material for redefining spatial thresholds within the geothermal landscape of Iceland.

## **DIVERSION DYNAMICS: A PERFORMANCE-BASED APPROACH TO DECONSTRUCTION ANALYSIS**

Matan Mayer, IE University - Instituto de Empresa

This paper presents a deconstruction analysis approach which focuses on mapping variations in landfill diversion rates throughout the course of onsite operations. The methodological foundations of the approach are described and a study of a recent deconstruction case is presented in order to demonstrate practical applications. Lastly, challenges, opportunities, and future developments are discussed.

# The Design of Practice

## **COLLABORATION: PROPELLING AN EXPANDED PRACTICE**

Caryn Brause, University of Massachusetts, Amherst

Architectural practice is rapidly transforming due to forces both internal and external to the design professions. Practice takes place in a globalized context that involves sophisticated tools and workflows. And while new models may be emerging to address the changing practice landscape, the institutional, financial, and social pressures toward normalization in order to mitigate risk remain substantial. In research focusing on collaboration, there is evidence that collaborative practices provide a measure of deviation from some of the normative and systemic organizational constraints that currently surround architectural practice, while at the same time providing outlets for project innovation and creativity. This paper considers three collaborative models that satisfy the pragmatic external drive toward organizational isomorphism, while drawing upon multiple intelligences to spur project innovation. It contends that, by operating within normative constraints of practice, these more subtle shifts may expand the design space for new models of future practice, while buying time for new tools and operational structures to develop.

## **LOVE'S ALTERATIONS: COMPLEXITY AND PARSIMONY IN CONSTRUCTION DOCUMENTATION**

Luc Phinney, Virginia Tech

Why is it that despite best efforts and every innovation in technology the work of construction documentation seems to grow evermore complex and time consuming? What is the particular nature of these documents, as architectural representations, and how do they achieve (or fail to achieve) their ends? To understand these questions we need to understand the relationship of the architect to her tools (above all, her drawings), over which we would hope she exerts control—though for the young architect it may often feel like the opposite is the case. The intern hopes and waits and works for any little stitch of design work, of responsibility and control, only to find when she becomes a principal that the demands of practice are no less grim. The bad news is this can only get worse as economies and ecologies, and their various margins, contract. The good news is that a system of ever-increasing complexity will ultimately, necessarily, be replaced. Understanding what this “not-if-but-when” metamorphosis of practice requires, and necessitates, is the topic of this paper: how, that is, to move from prescriptive complexity to an open parsimony in our representations, and why parsimony is a cause for hope.

## **SEEING DOUBLE: STORIES FROM THE THEATER OF PRACTICE**

George B. Johnston, Georgia Institute of Technology

The ongoing revolution in architectural practice cannot simply be explained by the ascendancy of new design technologies. Dynamic relationships that intertwine public and private interests, academic and vocational knowledge, and dialectics of means and ends have long been at work in shaping the destiny of architecture culture, both as discursive field and material process. The archetypal actors on the stage of architectural production – owners, architects, builders – have ever been fluid characters, each redefining their own agency and identity with respect to all the others in the shifting shadow-play of prevailing practices. New digital information technologies may reveal or further mask the terms of these relationships, and they may accelerate or retard their transformation; but instability in the historical framework of architectural practice is arguably as much a precipitating cause of the digital dialectic as it is a resulting effect.

This paper outlines an approach to the history of U.S. architectural practice that takes into account the unresolved tensions that still abide from formative episodes in the process of professionalization issuing from the first quarter of the twentieth century. The ongoing project proposes to “unpack” The Handbook of Architectural Practice, first published in 1920, as an index of controversies and disputes then at the fore. It is suggested that attempts to ameliorate those conflicts have only provided provisional remedies and that ongoing shifts in models of architectural practice are as indicative of those unresolved tensions as they are reflections of revolutionizing technologies.

## **STABILIZING PRACTICE: A CULTURE OF BUSINESS AT DANIEL, MANN, JOHNSON, AND MENDENHALL, 1960-1984**

Aaron Cayer, University of California, Los Angeles

This paper examines the early history of the Los Angeles-based architecture firm Daniel, Mann, Johnson, and Mendenhall (now AECOM) as it morphed into a late capitalist architecture corporation between the 1960s and 1980s. The firm was in desperate need of managerial expertise in 1950 to position it toward growth and profitability; by the 1960s, the demand turned to expertise in engineering; in 1970 to real estate and technology; and in 1980 to managing mergers and acquisitions. Growing by acquiring and merging with a diverse array of firms, services, and resources to keep up with the demands of the urban political economy, the history of DMJM is one of a deft and highly responsive architectural practice. This was made possible by a slow separation of manual work from knowledge work, which allowed the scope of architectural work to be broadened within the office to include the financial, technological, and social processes that undergirded the built environment and that could provide a wider basis for practice.

## Design for Performance: Session 2

### INTEGRATION OF EMBEDDED SYSTEMS INTO BUILDING ASSEMBLIES

Andrzej Zarzycki, New Jersey Institute of Technology

In light of recent advances in material and construction technologies, architecture is increasingly pushing the boundaries of surface performance: the upper limit on its thinness, its mediatory role between interior and exterior spaces, and foremost its ability to establish an efficient relationship among the constructed artifact, the human dynamics, and the environment at large. In this context, contemporary architectural investigations draw meaning from the biological sciences, and more precisely from the physiology of breathing, enquiring into issues of regulation, comfort, and sustainability, as regards the performance of the building envelope.

Such investigations however are not new. In the early decades of the twentieth century, the growing demand for the insulation of the proliferating all-glass envelopes and the ventilation of the spaces found therein, brought into question the regulating character of the building exterior. To this enquiry, Le Corbusier responded with a concept borrowed from the function of the lungs. For him, the adaptation of glass façades to their surrounding environment was a question of air circulation – breathing, responding, integrating. His theory- and design-led explorations into the breathing potential of the built artifact were centered around the mur neutralisant and respiration exacte techniques, through which he aimed at infusing living air in the outer layer and interior space of a building, hence influencing the experience of the human occupant of architecture.

But Le Corbusier was not alone in envisioning the building exterior as a breathing skin in those days. “The massive porous encased space of today,” Bauhaus-alumnus Siegfried Ebeling wrote, “will become a membrane between our body as core and the plasmatic energies of the wider environment through the creation of new structural relationships.” For Ebeling, architectural space was understood in its organic interrelation with the human, environmental, mechanical, and even cosmic, energies and spheres. Through his visionary 1926 essay *Raum als Membran*, and his applied work from within the Hugo Junkers Stahlbau research project, he stressed the necessity to explore the intersections between architecture and biology – to consider, beyond the formal and aesthetic, the ecological impact of building.

As we breathe the surrounding air through our membranous bodies, the theorization of the building envelope as a living, breathing organism lives on to the present day, and following the ongoing negotiation between space, body and the natural environment, merits further research. The cases of Le Corbusier and Siegfried Ebeling – and their understanding of architecture’s intersection with biological notions –, trigger here a discussion of the organicist, but also technological and ecological, extensions of building. A closer look on both cases may hold the key to a deeper understanding of the interpretation of the building envelope as an organic surface, membrane or skin, and on how meaning from the field of biology has fostered new explorations into the theorization, not least the materiality, structure and behavior of the building envelope.

### RESPONSIVE SYSTEM: A PROTOTYPE FOR BUILDING PERFORMANCE

Ming Hu, University of Maryland

This paper focuses on developing a prototype of a responsive system with interactive solutions for dynamic environments. The aim of this project is to develop a self-sustained interactive component. First, a conceptual framework of integrating sensors and actuators into a building is set up and tested to achieve an environmentally sensible responsive system. Then an operational scenario has been investigated and a prototype has been tested as well. Lastly, the potential implication of the prototyping is discussed.

### THE STRUCTURE OF THICK SPACE

Beverly Choe, Stanford University  
Jun Sato

In the last academic year, we co-taught two Design Build courses using a structures-driven design process for the construction of full scale outdoor installations. The material explored for both courses was standard steel wire mesh: the type typically used for agricultural purposes. Students followed a methodology we have developed, called Responsive Structures, in which students mine the structural, spatial, experiential and poetic potential of a specific material.

In Responsive Structures, the exercises are sequenced such that students learn structural principles in a physical and immediate way. Students first conduct small scale model making and material testing. They are encouraged to push the structural boundaries of the material to the buckling point to discover the behaviors and limits of the material. These exercises also start to define the spatial character of the material. Their concepts evolve through this dialogue between material performance and poetic aspiration, and are further activated with a site strategy.

In the next phase, prototyping at full scale requires that students test and codify assembly methods. Since the final installations measure more than 10’ in height and 25’ in length, the pragmatics of building construction, sequencing, joinery and the development of best practices are essential steps in the realization of these ephemeral spaces. Students learn how to develop building methods and details so they strengthen the experiential, visual and poetic intentions of the pieces. These steps culminate in the full scale construction of their designs on a selected site.

In the paper, we give in-depth descriptions of the design process and final installations, called “Fall Leaf Catcher” and “COCOON”. Although the methodology and material palettes were similar, the results reveal striking differences of approach structurally and spatially. We show how structural investigations and analyses merged with conceptual and visual intentions, resulting in a typology of space we call “Thick Space”.

Through this methodology, we seek to develop a richer platform for spatial, experiential and structural experimentation. Optimization is expanded to include all of these realms, and the resultant projects posit a new method of space making.

## Design for Performance: Session 2 (continued)

### **WHEN WALLS BECAME MEMBRANES. LE CORBUSIER, SIEGFRIED EBELING, AND THE CONCEPT OF THE 'BREATHING-WALL SKIN [WANDHAUT]'**

Stamatina Kousidi, Politecnico di Milano

Due to an ongoing exploration into the potential of the architectural surface – in mediating between interior and exterior space, human dynamics and the environment at large –, contemporary architectural literature borrows extensively meaning from the physiology of breathing. “It’s alive!” exclaims the title of a recent project in Arup’s think-tank portfolio, challenging one to imagine “a public building that has a sensitive and multifunctional skin” (Hargrave 2013). Although the building exterior is being nowadays increasingly characterized as a breathing skin, in a way that surpasses the use of other traditional linguistic terms that refer to an architectural surface, the context of such metaphor remain under-explored.

In the early decades of the twentieth century, the growing demand for the insulation of the proliferating glass envelopes and the ventilation of the spaces found therein, brought into question the regulating potential of the building exterior. To this enquiry, Le Corbusier responded with the respiration exacte and mur neutralisant techniques, aiming to infuse ‘living air’ into the double outer layer of the building. For him, the adaptation of glass walls to their surrounding environment was “simply a question of the lungs” (Le Corbusier 1935) – breathing, responding, regulating. But Le Corbusier was not alone in exploring the performance of the building exterior as a breathing system. A few years earlier, the Bauhaus-alumnus Siegfried Ebeling had developed his concept of the “breathing wall-skin [Wandhaut]” – a skin which articulated his vision of an energy-efficient, naturally-lit and porous building envelope. By comparing constructed space to the physiological membrane [Raum als Membran], in his homonymous 1926 essay, Ebeling accentuated the environmental significance of building and the necessity to accentuate the physiological aspect of architecture – the importance of the “content [Gehalt]” over the “external appearance [Gestalt].”

Articulating concepts of mediation between interior and exterior space, materiality and performance, human and constructed space, the breathing metaphor lives on to contemporary discussions on space, informed by works that exceed the architectural literature and cross the terrains of philosophy, sociology and the cultural studies. This paper thus investigates the potential of the said metaphor to enhance the perception of the built artifact, to interpret the materiality of space and to anticipate forthcoming design phenomena – evolving from expression to performance. Complementing an ongoing interest in the connection between organic reasoning and architecture, this contribution will discuss how the process of breathing, through the selected twentieth-century architectural case studies, has fostered new explorations in issues of embodiment, interiority and mediation as regards the built artifact. As we breathe the surrounding air through our membranous bodies, the building envelope has been theorized as a porous breathing organism, and this analogy – from within an era of constant negotiation between body, space and air – calls for further investigation.

# Health + Design: Session 1

## MOVE DETROIT: AN ACTIVE CLASS SPACE INTERVENTION

Ulysses Sean Vance, University of Michigan  
Rebecca Hasson, University of Michigan  
Darin Stockdill, University of Michigan  
Ben Ransier, University of Michigan

According to the National Center for Environmental Health the built environment directly influences a person's level of physical activity, in which the center attributes the absence of particular elements that support the presence of bicycling, walking, and other physical activities as contributing to sedentary habits. Habits that the Division of Emergency and Environmental Health Services relates to a range of diseases and ailments including obesity and diabetes. Our collaboration is a direct engagement of this understanding and positions professors in architecture and kinesiology with educators and wellness specialist in determining new trajectories in creating physical challenge through architecture. Our partnership situates an understanding of these findings into domestic and institutional settings, and discusses everything from the furnishings of a single classroom to the civic infrastructure connecting home and school. The primary result of which is an "Active Class Space" that studies educational conditions germane to the greater Detroit Metro.

Our objectives were three-fold, with the later supporting a proactive approach to situations and settings in which students are confined to a single room for most of their school day, conditions that are less than optimal in catalyzing sufficient levels of daily physical activity. Our initial goals were to first conduct a baseline metabolic benefits study of students' activity levels in a typical urban classroom, and secondly to conduct a baseline cognitive benefits students' activity levels in a typical urban classroom. This would support the presence of physical activity breaks within the daily classroom activities and foster the development of classroom modifications that encourage comprehensive student and teacher participation. The third and culminating goal was the proposition of design solutions that achieve a more responsive classroom environment and promotes physical activity alongside other progressive policies that promote cognitive and intellectual growth in students beyond the classroom as a class space between home and school.

Our interventions are currently taking place at three schools in Detroit and represent the current innovation and application of design in addressing the dilemmas facing a younger generation, a generation that without such interventions could see a shortened lifespan due to the increased susceptibility to disease as a result of extensive sedentary behaviors. Our findings thus far are that architectural design plays a significant role in shaping the processes and relationships that constitute physical activity in learning environments, and the creation of class space internal and external to a school that addresses cognitive learning as much as the behavioral necessity of physical exertion is paramount in assuring that children have the suggested allotment of daily physical activity to maintain positive health and wellness. This has significantly influenced the architectural portion of the team's outreach, and has fostered an architectural studio for discussing with the city of Detroit the intersection of education and housing in addressing wellness as a series of physical activity related filters.

## RACE + CAMPUS TRAVEL BEHAVIOR

Andrew D. Chin, Florida Agricultural and Mechanical University

The role of cycling as a significant and ecological mode of transportation has increased and more cities are encouraging it and other related active transportation opportunities (Dujardin et al., 2012; Shan, 2014; Snizek et al., 2013). For example, the American Community Survey data shows that D.C. bicycle commuting increased 208 percent between 2000 and 2012. (Bratman 2014) Many studies also examine K-12 transportation in kindergarten, elementary school, and junior high schools (Evenson et al., 2003; Ewing et al., 2004; Hoffman et al., 2014; Lang et al., 2011; McDonald, 2008; Schlossberg et al., 2006). Whereas extensive data exists on cycling and schools, there is limited data on utilitarian bicycling behavior across racial/ethnic and income groups.

Using the 2001 National Household Travel Survey, Noreen McDonald documented the rates of walking and biking to school among low-income and minority youth. She found that blacks and Hispanics used active travel modes at much higher rates than whites or higher-income students. (McDonald 2008) While McDonald found high rates for minority K-8 students, the same may not be true of minority college students.

The intent of the research is to understand the variation in bicycle commuting in two college campuses. It looks beyond the built environment interventions and highlights variation due to race. It also explores factors that are promoting and discouraging utilitarian bicycling among African-American college students.

As a pilot study, a review of existing literature on bicycle commuting variables was conducted and a survey was developed. The survey was disseminated to students to determine the motivations for and obstacles to bicycle transportation. The students were across various majors at Florida A&M University (FAMU) and Florida State University (FSU). FAMU is a public, Historically Black College/ University (HBCU) in Tallahassee, Florida. Like FAMU, FSU is a public university in Tallahassee. In contrast to FAMU, FSU is a Predominantly White Institution (PWI). For this research, the significant issue is the intersection of student demographics and bicycle amenities.

Additionally, case studies are compiled pertaining to two campus libraries falling on opposite ends of the bike-commute spectrum. In the end, this work should be helpful in understanding cultural differences in bicycle commute rates and in determining the types of investments that may be most effective in encouraging more bicycling on an Historically Black College/University (HBCU) campus.



# Health + Design: Session 1 (continued)

## **THE BUFFALO CONNECTION: PARAMETERIZING GEOGRAPHICAL SPACE AS A DETERMINANT OF HEALTH**

Michael Everts, Montana State University

The reintroduction of genetically pure Buffalo to the eastern plains of Montana in 2012 and 2014, after an absence of 130 years, has initiated a process of increasing species diversification, ecosystem resilience and renewed ambitions for Native cultural sovereignty on the Fort Peck Indian Reservation. Buffalo are a keystone species, critical to re-establishing a healthful environment. However, ecosystem principles and sovereignty rights create a complexity of boundary issues. Sovereignty is based on concepts of exclusion and ecosystem practices rely on common rights. Property ownership on the reservation, like the U.S., is structured by the Jeffersonian grid, and is manifested as a complex checkerboard of varying (60% of reservation land is owned by non-natives) ownership—a literal diagram of negotiated rights to possess, profit and exclude. The conflict between these concepts—ecosystem and sovereignty—shows up clearly when resources are the determinant of success: grasslands and grazing, mineral deposits and extraction. By looking at the overall spatial organization that these principles operate in and consider re-parameterizing the spatial organization from grouped areas within a grid network to temporal conditions in an organic rhizome network, we can align the principles of ecosystem and sovereignty. This creates a codependence of boundaries—geographic ownership and land based resources—critical to the Native culture that bases its origin on a deep connection to land. It is also important that the system of land configuration support the construction of social capital space in a manner that is culturally specific. Native geographical space configuration promotes the emergence of new, culturally significant, space. The need for this kind of “performance” space has been identified in two surveys, and social research conducted on the reservation since the return of the Buffalo. Reservation youth lack ability to connect with the human-bison concept that underpins their origin. The capacity to do this is also diminished because of the lack of geographically specific space in which to construct social capital that in turn would be a determinant for improved health. This paper presents the design process and product of an ongoing collaborative design build project initiated by a graduate level architecture studio. The design proposes an “under the radar” re-parameterizing of land pattern-use with the establishment of geographical prayer, ceremony, family gathering, recreational and Buffalo connection nodes in the historically significant land patterns of the reservation. In addition, phase two—a parametric “story pole”—is being prototyped as a working catalyst to help create shared knowledge and improve self-efficacy among youth, who are disproportionately affected by high poverty rates, disease and substance abuse on the Fort Peck Indian Reservation.

# Open: Appropriations

## **A BUSTLE IN THE HEDGEROW: ALFRED CALDWELL AND PRAIRIE LIVING IN THE URBAN CONTEXT**

Noah Resnick, University of Detroit Mercy

Tucked in the corner of one of the 30 plus pages that comprise the Construction Documents for Lafayette Park, lies an intricate, yet profoundly simple drawing that embodies the design philosophies inherent to the success of the project. Alfred Caldwell's Section Detail of the Hawthorn hedges, a drawing that could have easily been achieved in less than ten lines, is instead an almost baroque exercise in documenting the complexity of the plant's internal structure in relation to its simple external geometries. When viewed in the context of the site plan, for which the majority of the sheet dedicated to, it visually represents the complete inverse of the Mies building lines - a rigid box containing landscape vs. empty boxes contained within the landscape. This essay examines Caldwell's drawing as a metaphor for the designers' understanding of the balance between architecture and the landscape, as well as the relationship between the rigid geometries of Mies' modernism and the organic patterns of use by the inhabitant.

## **ANIMAL: AN AGENT BASED MODEL OF CIRCULATION LOGIC FOR DYNAMO**

Christopher J. Beorkrem, University of North Carolina at Charlotte  
Christian Sjoberg, University of North Carolina at Charlotte  
Alireza Karduni, University of North Carolina at Charlotte  
Jefferson Ellinger, University of North Carolina at Charlotte

Architects form an intuitive model of the ways in which people will occupy and navigate the spaces they design. This model helps them to make decisions about the relationships of spaces to each other. Architects engaging in computational design face the issue of translating their intuitive models of human movement behaviors into a digital representation. Creating a digital model of circulation logic allows for it to be factored into the computational design process and ultimately influence the outcome of a designers script. This paper analyses an agent based modeling strategy for the approximation of directed human movement within an architectural space. It follows the development of a package for Dynamo which will allow designers to factor occupant circulation into their computational design process in Revit.

## **DON'T PUSH ME: A HIP-HOP URBANIST MANIFESTO**

Sekou Cooke, Syracuse University

In her companion publication to the 2014 group exhibition "Ruffneck Constructivists," the show's curator, Kara Walker, lays down a radical manifesto for urban intervention. Just months before Ferguson and a year before Baltimore, Walker proposes a new "theory of architecture based around a ruffneck, antisocial, hip-hop, rudeboy ethos" wherein the artists invited to participate in her show (along with other architects and designers by extension) "are defiant shapers of environments." This invocation and juxtaposition of the terms hip-hop and architecture at the core of her manifesto is particularly remarkable given the show's exclusive assembly of visual and installation artists. When coupled with her selection of architect, Craig Wilkins, (whose 2007 book "The Aesthetics of Equity" first introduces the ideas of hip-hop architecture and urbanism in an academic publication) to write the introductory essay, Walker's declaration hints at her intentions of aligning herself with the nascent field of hip-hop architectural theory.

The theoretical groundwork promised by hip-hop architecture gives us

the clearest roadmap for imagining the "City After Freddie Gray." Hip-hop culture and each of its creative products, emergent from failed urban strategies—new urbanism, tower-in-the-park modernism, and the oppressive universal grid—presents a provocative alternative for urban design. Wilkins describes this as a transition from "(the ideal) space," the assumed normative condition, through "(we'll just deal) space," a space of segregated experience, to "(it just got real) space," where truth is spoken to power, and finally to "(we'll just steal) space," the space of the ruffneck, where marginalized people exercise unlimited agency over their environments.

This approach informs the main goals of a research project, funded by the DC Office of Planning, seeking to use hip-hop architecture as a lens through which to frame new understandings of identity within various Washington, DC neighborhoods. This paper will situate the design research within the goals of the city's "Creative Place-making Initiative" and the larger narrative of creative responses to oppressive urban strictures latent in the hip-hop paradigm. This paper will also introduce the two core concepts within hip-hop architectural theory—the architecturally restrictive conditions present at the birth of the hip-hop movement, and the exclusion of architecture from the various creative modes of hip-hop expression—as a means of highlighting the topic's required inclusion within contemporary urban discourse.

## **WATERLINES:RIVERBANK- CHOOSING THE EPHEMERAL & PROCEDURAL IN CHESTERTOWN, MARYLAND**

Ronit Z. Eisenbach, University of Maryland  
Aleksandra Vrebalov  
Cassie Meador  
Jeni Wightman

How can the ephemeral and procedural engage and shape the substantive?

We will discuss this question using the example of WaterLines:RiverBank, an ephemeral installation and performance developed over a year-long residency, designed with and for the 300-year old town of Chestertown, Maryland. The talk will share how each member of the Creative Team's efforts shaped both their understandings and the final intervention while simultaneously including local makers and participants.

Sites-in-flux are complex moments in the life of a community. While change is constant, there are situations when uncertainty and possibility loom large and transformation is often anticipated, but not yet fully envisioned. Ecological, social and economic pressures that spur transition within communities can create tensions, fear and division, but also immense opportunity. Collective participation and co-creation can crosslink communities through shared experience, fostering connections, building memories, uncovering stories and re-envisioning place. Artistic encounters in situ have the power to reach people whose voices may not initially be at the decision-making table and spark public dialogue among a wider group.

Chestertown, Maryland, is a community in transition. Over the last five years, the town's various stakeholders and cultural institutions have aggressively pursued a multi-prong strategy to protect and build upon its unique cultural and natural heritage, and to proactively address existing and anticipated environmental, economic, social and cultural challenges. The community is striving to adapt and envision its future, in many cases employing art, design and culture as part of this effort. It is within this context that WaterLines was commissioned by Washington College's, SandBox Program whose mission is to foster "collaboration between the arts & science to promote dialogue

## Open: Appropriations (continued)

about the environment.”

Referencing the town’s natural setting and cultural history, the culminating work, *WaterLines*, explored the changes that have shaped and reshaped this community. On three evenings, the sonic, luminous, and interactive environment transformed the vacant Chestertown Bank building into a “world of rippling light and sublimely meditative sound”— evoking the connections, interdependency, and exchange between river and town, bank and river, and built and natural environments. A second night concluded with a public procession from the bank to the river’s edge, reinforcing the town’s deep connection to the water, and encouraging a greater understanding and sense of responsibility for this important natural resource.

*WaterLines* provides the experiential basis for two claims: First, it illustrates how the intersection of community members and artists promoted opportunities for a cross-fertilization of knowledge that enriches and challenges understandings of place. Second, this example illustrates the potential value of focusing creative placemaking work within sites-in-transition, where there are pressing opportunities to shape and reflect upon the built and natural environment, build relationships across communities, surface histories and rebind/reawaken the enduring ‘frayed knots’ (Fullilove, 2013) of people in places facing expected ‘substantive’ changes. *WaterLines* created a powerful public experience that stimulated reflection about deeply shared values, while also surfacing, as one resident put it, “anxiety as the ecological challenges to our beloved home become more obvious.

# Addressability

## **FROM BIT TO IT: THE DEMAND FOR NETWORKED BUILDING CODES IN THE SMART CITY PROTOCOL**

Jeana Ripple, University of Virginia

An interdisciplinary organization called the City Protocol Society recently proposed a universal format for urban data collection. Noticeably missing is a taxonomy of data-types to enable cross-referencing with an old form of city protocols—building codes. As smart cities move from data collection toward predictive formulas, this article argues that both smart city data and building codes must adapt to share attributes and test operations. Using computational theory as a framework, the reorientation of building codes toward networked response is considered as a link between urban material performance and the next phase of smart city formation.

## **NEW CLOUD ATLAS**

Joseph Dahmen, University of British Columbia

Ben Dalton, Leeds Metropolitan University

Amber Frid-Jimenez, Emily Carr University of Art and Design

Access to information is a vital element of a free society. However, contemporary information infrastructure is largely constructed, operated, and maintained by major corporations. These multinational entities have a reach at once more extensive and less transparent than the national governments that have traditionally provided other forms of public infrastructure (Easterling, 2009). The New Cloud Atlas (<http://newcloudatlas.org>) is an open-source participatory platform that maps and catalogues the physical assets of the cloud—warehouse data centres, internet exchanges, connecting cables and switches—in an open and accessible way, making the physical infrastructure of information a matter of public concern.

Multinational corporations currently control information flows, and the infrastructure upon which they depend, with minimal oversight. The half-million data centre locations spread across the globe are a barometer of global politics and free-market forces, determined by a balance of favourable data regulation, tax incentives, sufficient connectivity, and affordable access to abundant energy. Territorial disputes, international conflicts, and perceived threats have led corporations to shroud the locations of information infrastructure in secrecy. The physical and regulatory freedom to operate is paramount, with government regulation and oversight rendering sites less viable. Even as increased access to information at all levels holds the promise of more free and open societies, the physical assets required for the access to information are hidden from view, enabling the possibility of large scale control over access to information flows.

The New Cloud Atlas is a response to the current condition, providing an

online platform that engages the participation of users around the world to map and catalogue the physical assets essential to the flow of information. Drawing on the OpenStreetMap (OSM) community, contributors add to the New Cloud Atlas mapping tool using a customized OSM editor. Changes made to database are parsed and imported into the New CloudAtlas in fifteen minute intervals. All New Cloud Atlas data is available to developers who want to build on the resources, ensuring that the work of mapping the global cloud infrastructure is kept openly accessible. The project is modelled on the International Meteorological Organization, which at its founding in 1873 was one of the first transnational entities engaged in the exchange of information.

## **THE IMAGE OF THE (SMART) CITY, REDUX**

June Williamson, City College of New York

Extensive and growing informational infrastructures that increasingly inform the shaping of human settlements are engendering new design practices. In this paper, I speculate about discursive contexts in which emergent new roles for design professionals are in formation. One fruitful line of inquiry is to compare and contrast emergent desires, concerns, and anxieties of today with normative theories of city image and “good” city form offered by Kevin Lynch from the 1960s to the 1980s. His books *The Image of the City* (1960) and *Good City Form* (1981) bracket a period infused with Cold War desires, concerns and anxieties—for national dominance, efficient organization, speed, modernization, and security from the threat of nuclear annihilation. Our milieu today is characterized by pervasive desires for ubiquitous interconnectivity and increased human agency, concerns involving adjudicating difference and belonging, and anxieties stemming from threats to personal privacy, and to our bodies via the violence of fundamentalist terrorism. Recent texts from Verner Vinge, Benjamin H. Bratton, Anthony Townsend, and Adam Greenberg begin to outline steps on paths towards an ethical path for designers to follow in this era of proliferating “smart city” models and schemes.

Lynch posits the crucial role of humans as co-creators of their settlements, collectively responsible for what they create. In his theory, the components of “good” city form extend to five dimensions of performance: vitality, sense, fit, access, and control, and two “meta-criteria”: efficiency and justice. The visual image of the city is encompassed by “sense,” just one of the seven. Do these performance dimensions and meta-criteria for good city form still make “sense” to us today? I suggest that to some degree, they do.

While I draw no definitive conclusions, I suggest that it is incumbent upon all those who contribute to the design of habitats to grapple with this type of speculation, regardless of whether they intend to participate directly in the creation of immersive VR environments (what Bratton labeled “iPhone City”) or will remain primarily builders of physically “real” urban settings, landscapes, and buildings.

# Addressability (continued)

## **THE MEDIATED COMMUNITY: A HISTORICAL VIEW**

Ming-Chun Lee, University of North Carolina at Charlotte

In the era of cloud computing, big data, mobile technology, and the Internet of things, we have seen intensified discourses around the notion of smart city. Investigations into the processes by which data are collected, information is derived, and their implications on the ways our man-made physical world is transformed have been prime subjects of study in many fields, including computer science, human geography, sociology, city planning, etc. Among various research topics, a theme focusing on meaningful processes of human interactions and social exchange that may lead to the creation of new forms of urban existence has emerged. Social media, crowd sourcing, voluntary information sharing, zetcitizenship, are among those key subjects of interest that are being examined by researchers.

The common goals and research intents held by this camp of researchers are to understand how this new class of communication platforms generates a new type of human institutions perhaps through a new form of governance; how the new platforms help achieve humans' social, economic, political and cultural goals; how the society as a whole organizes a technology context (institutional, organizational, training) that optimizes the use of these new media and their related opportunities? To further the inquiry into these questions, I argue that we need to look back in time and visit again some of the key conceptions and theories about the interplay between the technology and the society.

This short literature review has three goals: first, to re-examine practical aspects of the concept of community; second, to investigate the relationships between mediated communication technologies and community; third, to explore how information and communication technologies (ICTs) may affect the creation and processes of community.

## Health + Design: Session 2

### **ENHANCING HEALTH AND PERFORMANCE OF STUDENTS IN A LEARNING ENVIRONMENT THROUGH A DIGITAL PRE-OCCUPANCY TOOLSET**

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The learning environment, including its physical design elements, has been shown to contribute significantly to student performance outcomes. However, the existing literature about such effects relies primarily on casual observations rather than on rigorous empirical testing. Broad trends in environmental impacts have been noted, but there is an overall lack of empirical evidence about how specific aspects of the physical environment can affect learning performance. This research aims to develop a digital pre-occupancy toolset to understand the impact of different interior design variables (independent variables) on learning performance (dependent variable). In this multi-stage study, we first use interviews with students and educators to help identify hypotheses about the relationship between specific interior design variables and effective learning experiences. We then develop a digital toolset to quantitatively measure the effect of these design variables. The toolset is based on an Augmented Reality approach. Wearing a virtual-reality headset allows participants to experience video footage of the same classroom lecture, but with specific features of the environment altered (ceiling height, views and visual access to nature, and wall texture). Various quantitative tests will be conducted to measure learners' responses to these three variables and their capacity to assimilate lecture material within the different parametric environments. Identifying and testing these specific elements among different student groups can help interior designers to better succeed in creating supportive spaces for learners. The digital toolset is developed with a consideration toward flexibility, so that it can be readily adapted by future researchers and designers to investigate the potential effects of additional interior design variables and their relationship to other human factors (such as stress responses, visual memory, etc.).

### **HEALTHY SCHOOLS, HEALTHY LIFESTYLES: CAN SCIENCE INFORM THE DESIGN OF ELEMENTARY SCHOOLS**

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As in several other countries, the school estate of Quebec is worn out. Built for the most part before 1970 to serve the children of the baby-boom, its updating is unavoidable if the government wants to maintain its economic value. Aside from the construction concerns, retrofitting this building stock represents a unique opportunity to direct renovation toward solutions to transform schools in which youth spend most of their waking hours in ways that are better suited not only to their education but to enhance their health and well-being. How can researchers-designers help improve the numerous

calls for tender that will be posted by school boards, and the plans and specifications that will be drawn up by dozens of architectural firms over the next 10 years? This chapter exemplifies how to mobilize scientific evidences to inform the renovation of school buildings, and bring together the best available knowledge to guide this complex decision-making process. It should be useful to designers, but also to administrators managing schools, as well as to staff and even pupils, via their parents. The first section discusses the challenges brought by this mission. The second one summarizes the relevant scientific evidences. The conclusion addresses the urgency to train stakeholders and architects to use such tools to support design decisions but also to empower the next generations to act as knowledge translators.

### **THE HUMAN EYE: A WINDOW TO HEALTH AND WELLBEING**

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Modern societies are experiencing a proliferation of light-related disorders associated with irregular schedules promoted by electrically illuminated indoor environments. In stable environments, evolution promotes an adaptive balance between desires, behavior and physiology. In rapidly changing environments, however, an imbalance can develop between these factors creating harmful maladaptations. Recently, studies have shown that people who work at night have higher incidences of breast and colorectal cancers, suggesting that such an imbalance may have occurred between our ancestors' adaptation to the gradual waxing and waning of natural daylight and on-demand electric lighting. Cognition and perception are also affected by the quality of the light and when indoors, lighting affects the ability to navigate from room to room and/or transition from indoors to the outside. This paper will examine interactions of physiological, perceptual and technological variables to support light and health in indoor environments and will demonstrate guidelines for a healthful interior lighting environment.

