PITTSBURGH, PA

107TH ANNUAL MEETING

BLACK BOX

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BLACK BOX:

Articulating Architecture's Core in the Post-Digital Era

2019 ACSA 107th Annual Meeting

Abstract Book

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Thursday, March 28, 2019
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Careful Crates: The Materialization of Data

Laida Aguirre, University of Michigan

Boxes, containers, crates can be used as a lens to look at a series of current socio-logistical phenomenon. These, presumably simple, tools of commerce have had profound impact ranging from the downturn of in-store retail to the proliferation of the return policy as a widespread approach to commerce. The box serves as the meta-design component of a large network of commodity distribution and in doing so it has created a culture of modularized thinking, a separation between product image and physical inventory and a general box-clever approach to the movement of material goods. In many ways, it has datafied our physical worlds.

‘careful crates’ is a mixed-media project focused on shipping/returns as a cultural and physical contemporary condition. Referencing Richard Artschwager’s ‘Crates’, this project serves as material resistance to a standardized bounding box economy that organizes, binds, shelters and delimits contents in anticipation of global circulation. The project consists of several props on a set where a video is filmed in collaboration with comedian Ana Fabrega. The film depicts the main character in a warehouse attempting to guess the contents of a series of boxes.

Multi-Modal Mingling: Queering BIM through Transportation Hub Design and Networks

Danelle Briscoe, University of Texas at Austin

The accumulative nature of our post-digital/ post-natural moment surfaces in the context of urban transportation networks. While massive amounts of ubiquitous personal GPS data records user physical activity, planes, trains and automobiles share and deliver real-time information related to mobility routes. For most cities, systems build-up additionally holds both planetary and quotidian crises: heat island effects overlay with infrastructural neglect, terrorist attacks in subway stations merge with lack of user provision, and air quality collapses under the daily reality of the Anthropocene. Such a collision of hierarchies not only affect the urban extremities of transportation, but moreover the way we experience, practice and teach architecture.

One could argue that such messiness contradicts the precision and completeness of the often “required for construction” Building Information Modelling (BIM) realm. Not unlike Jacob Gaboury's writings on queer computing, queering BIM legitimizes the critique of who and what the platform identifies, recognizes and makes visible. More broadly, the process of “multi-modal mingling” holds promise for radical practices of information design in an otherwise lackluster realm of urban/regional transport planning. A process for both research and academic studio entails moving past default settings and standards to include the odd, diverse and discounted that exists in this accumulative world of transport.

This project presents the research findings and pedagogical studio agenda afforded by a grant from USDOT University Transportation Center and Center of Cooperative Mobility for Competitive Megaregions (CM2). By focusing on the human scale and objects of transportation related inhabitation; identifying the network hub devoid of its envelope of “architecture.” Sharon Mattern's "A City is Not a Computer" [1] reminds us to consider and question society’s relationship to technology so by this premise, built form is not necessarily programmable and able to tidy into rational order as we once knew it.

Student development of “User Based Scenarios” collapses the hierarchies of governance and predicts relevant circumstances of transit integration. The congestion of a suburban commuter for example to an urban workplace holds all the data but less legibility in the queered BIM and survives off feedback related to energy spent and offered with each interaction and system assembly. A woman selling churros in the subway for example hold agency as a deduced and digitized modelled family in order to overlap, speculate and build upon in the project. The collision of hierarchies challenge the students’ design perceptions using the global issues at hand and how local circumstances affect them. This causes us to rethink the practice in terms of the zonal logics and intermediation of networks and technologies deemed “smart”[2] Thus, pedagogy is empowered to frame (and benefit from) a knowledge base of scale conflation of advanced and alternative transportation design elements and their representation, further promoting diversity and environmental optimization for the advancement of practice.

[1] Shannon Mattern, “A City Is Not a Computer,” *Places Journal*, February 2017. 18 December 2018. https://doi.org/10.22269/170207
[2] Halpern, Orit and Robert Mitchell, Bernard Dionysius Geohagan. *The Smartness Mandate: Notes toward a Critique*. Grey Room. 18 December 2018. https://doi.org/10.1162/GREY_a_00221

Dirty Business

Jean Jaminet, Kent State University
Joshua Myers, Kent State University

Architecture is particularly adept in producing waste. The skillful collection of waste at a domestic scale and its distribution within a vast network of undetectable conduits is relevant to contemporary circumstances, which prevent any meaningful reconciliation of the personal impulse to accumulate with the universal desire for equilibrium. Readymade goods play a significant disciplinary role in a culture that has completely abandoned resistance to commodification, instead favoring the spectacle and sensations produced by these objects.

In architecture, readymades are essential building components (material) and superfluous construction debris (materiel). They are invisible utilitarian tools, engineered with metric precision (anti-matter) that simultaneously produce unintended decoration, eliminating the need for craft (proto-image). The disposition of the readymade is relevant to architecture's waste management crisis as both ubiquitous physical commodity and disposable cultural image.

Dirty Business retrofits a manufactured portable toilet with machine-extruded drainpipes. In this scenario, object becomes site and surface becomes object. The readymade is procured as self-accumulating agent with mutable physical properties, reconfigured by the blatant image of their everyday operation. An alternative narrative unfolds with the introduction of new characters exhibiting an inclination for the awkwardly upright:

"The Squatter" is the most public figure, but maintains anonymity as distorted exterior silhouette. Its shape is revolved and projected as profile, reconfiguring the existing fiberglass panels and providing a rear entry hatch concealed within the surface geometry.

"The Stiff" is an asocial mannequin fixed about the periphery of the interior. This ill-fitting compound of rigid readymade extrusions is guided by the contours of the molded lavatory partitions and ossified as articulated relief, feigning appearance as both detached ornament and figural poché.

"The Hugger" engages the territory between the interior and exterior as intruder and imposter. Patrons are disarmed to find the stall currently occupied by this limp figure with supple skin awkwardly positioned in the corner. Interlopers crawl into the Hugger's internal cavity to puppeteer its flaccid arms and peer through its portholes.

The inconspicuous treatment of the exterior is a prelude to the subversive possibilities of the interior. The portable toilet maintains its fiberglass shell and surficial exterior appearance. The existing door provides primary entry, but only the illusion of privacy. The rear hatch and other discreet apertures elicit anonymous probing and surveillance from the outside. Another reality emerges on the interior, one that magnifies and augments the complex of cavities and conduits that insure civil operation, confronting the nature of society's contrived functional and cultural mechanisms.

Dirty Business conflates the subversive public spectacle and the unsatisfying private experience of "using the facilities." This strategy of incontinence alludes to architecture's lack of restraint in producing disposable cultural images. Radically collapsing the form-function (readymade), object-subject (characters) and sacred-profane (interior-exterior) paradigms, new images and aesthetic association elicit a withdrawn intimacy that occupy the cultural limits of public urination, squatter's rights, public displays of affection and anonymous sexual encounters.

@archmixes

Sam Ghantous, Massachusetts Institute of Technology

Tweeting from your couch, in your sweats, might just be an architectural act.

An ongoing work of mine, the @archmixes twitter bot, is a response to a shift where it seems that architecture may be experienced more frequently through images that circulate online than in space. It is something like a meme-generator for architecture, prompting users to produce new images from existing ones. Even you can tweet by selecting from a list of codes I have compiled that correspond to 3D models made by amateurs on Trimble Warehouse. If you tweet using these codes, the bot will shuttle back to you a mashup (or sometimes just a monster) of the referenced models that have masqueraded as disciplinary matter. Not only do you receive a *.JPEG tweeted back @you, but you can also access a an *.STL in 3D hosted on sketchfab.com.

Rather than pronouncing an ambitious software or user-friendly UI, this work occupies ready-made formats and platforms for mediated social connection. Twitter is everyday in its ubiquity and the gravity of its exchanges (barring taunts by political regimes), and the bot abides by its recognized formatting requirements, hashtags, at-signs, and all. *.JPEGs and *.STL's neatly compress images made for being hosted online and shared, packaging architecture into inoffensive sizes.

Resisting the temptation for @archmixes' production to be viable buildings, they are resolutely images. Wielding color in audacious RGB, they pronounce visibility through vibrance and contrast. For the sake of expediency, quality is purposefully dispensed with so that delivery doesn't keep you waiting. Posted to Twitter, these images are framed perfectly square; maybe you'll want to share them on Instagram? Visiting Sketchfab.com, your 3D mesh patiently meditates, rotating about itself at the center of the frame. They're 3D printed to become tchotchkes only to be photographed and shared once again, perpetuating the mediatic loop.

@archmixes hopes to constitute a global audience by sharing architecture as digital images. It recognizes that an audience today shares as a way that interrupts traditional notions of authorship as singular, heroic, and original. This twitterbot establishes a scenario where images intentionally depend on multiple authors, through demanding selection, and by privileging circulation as a way to engage the contemporary architectural subject. This contemporary subject oggles, likes, and scrolls, but might also tweet, dispersing architecture in a way that confounds the distinction between the audience and the author. Sharing offers a critique through alternative sites for the discipline, installed within the infrastructure of media distribution.

Through recycling the pixel, vector, and mesh-waste that lives online, architecture has the opportunity to sustain the archive of its disciplinary history; it stands the chance to engage publics, and it might even sustain an economy of attention in an era of perpetual distraction. Images collapse the quotidian and planetary through distribution systems that make them simultaneously farflung and yet unrelentingly common.

Architecture of Attunement and Planetary Ecology 1

Thursday, March 28, 2019
2:00 PM-3:30 PM
Cambria West
Moderator: Dana Cupkova, Carnegie Mellon University

The Microcosm on a Page:
Attunement, Architecture, and the Naturgemälde

Matthew Huber, Carnegie Mellon University

In his essay “Durand and the Science of Architecture,” Leandro Madrazo examines the parallels between taxonomy, the dominant 18th century form of natural knowledge as practiced by Linnaes and Buffon, with the graphic methods of Durand’s typological architectural precedent studies. Each, botanist and architect, lays out as if on a tabula (see Foucault), specimen for relational analysis. This catalogic method renders the specimen inert, an abstract and singular identity. The empty space of the tabula disconnects and deterritorializes the forms from their contexts, their life-worlds. Quatramere de Quincy, on the other hand, pursues a much less mechanistic definition, the “vaguery” of the type not the specificity of the model. It is in this legacy that Greg Lynn, in work such as the Embryological house, looks to Gregory Bateson for a theory of the primitive, that morphologically supple basic type-form that carries a certain resonance with Goethe’s concept of the Ur-Plant. Yet this too reduces context to merely a secondary force with which to interact. Less pervasive within architectural discourse, however, another naturalist offers a method of interrogating the natural world that remains underutilized. Alexander von Humbolt’s world picture, the Naturgemälde,offers a mode of being in and understanding the world, as a manifold of relations. It offers the singular and the universal folded into a single framework and a simultaneity of the empirical and the poetic. The goal of this paper is to revisit the Naturgemalde’s epistemic relationship to architectural theory contemporary with it, to situate the drawing in relation to contemporary philosophies and knowledge structures, and to speculate projectively about how such a concept may operate as an abstract machine and world-knowing device to the interrogate and enhance architectural methods.

Between Birds and Humans: The Design of the Encounter

Giovanni Bellotti, Studio Ossidiana

Animals did not enter human’s lives as meat or leather, rather, they first entered our imagination as messengers and promises. The earliest drawings and one could suppose, the earliest metaphors, were about animals. In Greek mythology, Orpheus played his lyre and communicated with the creatures of the forest, as if the limit of understanding animals was a human one, that gods could overcome. Aristotle, in his *History of Animals*, organized animals according to qualities that they possess in common with men. In Christianity, Saint Francis spoke to wild animals, superimposing moral values upon all living beings. Plants and animals were far more than flesh and fiber, and their relation to humans was essential in defining both the human and the divine. Art historian John Berger argues that Anthropomorphism emerges from the constant use of animal metaphors, and the discomfort we feel today towards it is twofold: it is the residue of the continuous use of these metaphors, paired with the removal of animals from urban life. This “new solitude”, Berger writes, “makes us doubly uneasy.”

Atmospheric | Metabolic: Subsistence in the Antarctic

Ellen Garrett, City College of New York

Antarctica remains as the last bastion of vestal earth; still the perceivably vacant landscape seems an unlikely setting for the discussion of architecture. The vast continent boasts no permanent human residents and as a result has proven to be the most optimal case study of climate change. As its namesake suggests, the Anthropocene has known more widespread urban coverage than any other period. Not just urban sprawl, but all landscapes in service of such urbanism, such as industrial farming and oceanic gyres impact life at the poles. To understand humanity’s global influence on nature, we glean the most substantive information from areas that thrive in our absence. Evaluating the effects on marine life, the formation and degradation of ice, and the altered conditions of the ecology will help to inform ways in which architecture can better adapt to its polar environment.

In the most remote part of the planet, with six months of darkness and complete isolation, human settlement within the Antarctic is entirely reliant on resources found elsewhere. The remoteness of the continent and the dangers of traveling in winter months prohibits a steady stream of resources, which are used cautiously. There are no readily available building materials or means by which to sustain life long term in Antarctica. Research facilities depend on continually advancing building and material technologies in order to withstand Antarctic conditions.

In response to the prompt, “Architecture of Attunement and Planetary Ecology,” *Atmospheric | Metabolic* addresses opportunities for architecture to better adapt to a landscape that actively rejects it. Can these facilities that so closely monitor the landscape form a symbiotic relationship with its surroundings in order to evolve with the rapidly altering environment? Sean Lally speaks of expanding the capabilities of microclimates and ecosystems so as to make them architectural materials themselves. These investigations can lead us to a better understanding of the role of architecture in an increasingly volatile landscape, at the regional polar scale as well as globally. This is not to suggest that designers interfere with otherwise pristine landscapes, but instead consider how the built environment at large can be reconsidered within the context of more precarious surroundings.

While the surface of land mass in Antarctica is mostly barren and desolate, the ice shelves that extend into the Southern Ocean are teeming with life. Algae flourishes off the coast in summer months with nutrients upwelling from the ocean floor and 24 hours of sunlight. This is a major food source and an integral part of the ecosystem. Algae grows in abundance and is one of few photosynthesizing organisms on the continent. By incorporating algae into the built environment, there is an opportunity to provide significant reduction of external resources. With self-sufficiency comes reduced carbon footprint in an extremely fragile environment. The architecture in Antarctica has an opportunity to materialize energies so as to be an active testing ground that is both adaptive and informative, while helping to mitigate fallout from the build environment.

Flying Gardens: A Robotic Architectural Proposal for a Sessional Garden

Ebrahim Poustinchi, Kent State University
Katelyn Hannigan, Kent State University
Jessica Schultz, Kent State University

Flying Gardens project is an architectural question about the concept of time and change/reconfiguration through revisiting the inside/outside problem in architecture. The project focuses on the inherently architectural qualities manifested through the relationship between static and animated architectural components as well as interiors exterior. Following a flat ontological approach to design the architecture, flying gardens project, studies the potentials of object-oriented design strategies, employing time and motion as vehicles for the conversation. Using an industrial robotic arm, as an animator, to illustrate the possibility of physical architectural animation, allows for formal and spatial but scale-less relationships to emerge.

Through multiple configurations, flying gardens revisits the concept of time and spatial organizations through day/night, different temperature, weather, and seasonal scenarios. This notion of time influences the inside/outside relationship and is been illustrated through the difference of the formal language. Use of flowers in the physical model, not only a represents an architectural quality of a garden—garden surface but also suggests textural/formal dialogues between inside/outside and animated/static surfaces. The floral surfaces are projections of possible formal and architectural opportunities, such as apertures, and penalizations, mass/ground relationship to name a few.

Responding to Tom Wiscombe's calls for flat-ontology in architecture[1], this project seeks a non-hierarchical relationship between parts, where every part of the "architecture" works as an object. Inside of the object—independent from the design of the envelope, reflects the objecthood of the interiors. Ground-object works as a low-relief two and a half dimensional object that precisely interacts with the building object. Following this methodology, the flying gardens project closely revisits the concept of "super component." According to Tom Wiscombe, super-component an object that at the same time can act as an independent object and be part of another object. Through motion and reconfigurations, flying garden revisits this idea in a more literal way. In scenario one, the garden surface as an animated super component works as part of the building object to create a complete whole. However, in the second scenario, the same component—garden surface, becomes an independent object that operates as an entrance garden. Reintroduction of the super component into the second position allows the once contained flowers with the spherical voids and varying degrees of thickness from inside the object to spew out and create different configurations to start the spatial conversation.

This literal motion—according to Greg Lynn's terminology[2], introduces interior surfaces as exteriors and vice-versa to maximize the spatial potentials through challenging form, configuration, part to part and part to whole relationships, surface qualities, and organizational strategies to name a few.

[1] Wiscombe, T., (2014). Discreteness or towards a flat ontology of architecture. Project, (Issue 3), 34-43.
[2] Lynn, G. Animate FORM. New York: Princeton Architectural Press, 1999

Deductive, Inductive… Adaptive Methods in Architectural Design

Thursday, March 28, 2019
2:00 PM-3:30 PM
Washington

Moderator: Chandler Ahrens, Washington University in St. Louis
Aaron Sprecher, Technion Israel Institute of Technology

Open System Design Strategies: Towards a more Inclusive Architecture

Almudena Ribot, Pennsylvania State University

In this paper we will examine the different strategies that allow architecture to adapt to change and reprogramming. We will discuss buildings that are able to morph through time and use and work towards a definition of what could be considered an Open System in our post-digital era. These kinds of architectures are inclusive in two ways: they accept both changing needs and multiple agents, during the design process and over the life time of the building itself.

Flexibility and adaptability are overused words but they remain key issues for all architects. Today there is significant increase in interest in both from the point of view of construction and use. This research works to find ways to introduce the capacity for change and interaction into architectural design, to accommodate uncertainty, the unknown and the demands of passing time. To do this we need to identify the principal methods used to achieve flexibility in main stream, popular and vanguard architectural culture and more specifically in individual buildings where these strategies have been applied.

This paper works to construct a dialogue between the ideas in Adrian Forty's Words and Buildings: a vocabulary *of Modern Architecture* (T & H, 2004) and Tatjana Schneider and Jeremy Till's *Flexible Housing, (Architectural Press, 2007*). We will develop a diagram to help us combine these two sets of ideas and then extend that diagram to a more practical and sustainable application of them. The diagram constitutes a non hierarchical categorisation in which issues and case studies have the same weight, it is both a taxonomy and an atlas of methods and case studies. The process is both deductive and inductive, considering general principles and case studies.

The Rhetorical and Conditional Interpretation of Site, with Examples from the Work of Berthold Lubetkin

Andrew Tripp, Mississippi State University

This paper concerns the rhetorical interpretation of site in architecture. While my ultimate goal is to prompt alternatives to formalism in the beginning education of the architect, this paper presents the topic as a theoretical concern with examples from the work of Berthold Lubetkin. In particular, I will consider the topic of orientation as it relates to site definition in the Whipsnade House (1934-35) and the Penguin Pond (1933-34). These architectural projects introduce the possibility of establishing a rhetorical project alongside the critical project of Western Modernism, for which Hans-Georg Gadamer and David Summers will be my philosophical guides.

Object-Field: An Adaptive Interplay Between Autonomy and Contingency

Samuel Bernier-Lavigne, Université Laval

This paper focus on the relation between autonomy in the formal design of the architecture (the deductive) and the unpredictability associated with digital simulations (the inductive). Thus, we will take an analytical look at the evolution of the digital avant-garde in recent years, by studying the correlation between two fundamental entities: the *object* and the *field*. Following a chronological approach, we will first observe how the *field* will materialize flows of data into architectural masses, where the emergence of a singularity is dictated by local relationships. Then, a first interaction between these two elements will lead to the *field of objects*, while the architectural geometries will vary according to the contextual data. In reaction to this will come the architectural *object*, as an autonomous entity created from scratch by the architect. Finally, we will get to the core of the argument with the concept of the *object-field*, which proposes a reconciliation, as an adaptive interplay, between autonomy in architectural design and the contingency of digital simulation.

The *object-field* will provide new material resolutions to architecture. We will see the object being subdivided into simple or discrete elements. The complex assembly of these parts will follow the information related its intrinsic simulation. A renewed relationship between form and matter will be created; through an interaction between the macro, meso and micro scales, leading to fundamental questions about the architectural discipline, without isolating ourselves in it.

Imaging Architecture

Thursday, March 28, 2019
2:00 PM-3:30 PM
Westmoreland
Moderator: Cyrus Penarroyo, University of Michigan

Seeing Double: Decoys and Depictions

Constance Vale, Washington University in St. Louis

The images encountered in the contemporary world are multiple; they are animate artifacts, endlessly duplicating and translating so as to shift their constitution over time. At once, they act as intercessors, translating between pictorial, material, and informational realms. Architects have a long history of dealing with the translation of information from images to objects through architectural drawing, making architecture well-suited for staging discourse surrounding images. While contemporary images are radically different from orthography, their potential as translations runs parallel to that of drawing.

Rather than sequester digital imaging, this paper seeks to examine the cross-contaminated worlds of multiple image types. The intention of this investigation is to remain precise in these terms, combining image types not to dilute them, but to look for opportunities for productive hybrids. Understanding how contemporary images can impact architecture and vice versa requires a dualistic analysis of data and picture. As such, we can examine the ways in which physical artifacts confer the aesthetic effects of their data and constraints of their formats on the world of things that are under their spell.

Decoys and depictions — identified in theater sets, photography, dioramas, and other models that lurk at the periphery of the discipline of architecture — form the field of investigation. These objects that become, or attempt to become images present layered image formats that displace the conventional relationship of image frames and screens. These historical model open up possible avenues to consider how architects can take on similar investigations through image translations that inscribe architectural object with their material data. Images as visually comprehensible piles of information that speak to the complicated web of material orders that they chart, geopolitical boundaries they cross, and volume they consume. In this way, we can see images as inherently political enterprises and read their capacity to engage rewriting the material, informational, and volumetric orders.

We Are All Romantics, And That Is Fine

Kevin Hirth, University of Colorado Denver

"We Are All Romantics, And That Is Fine" is a polemical juxtaposition of historic and contemporary approaches to situating unbuilt architectural propositions in artificial context. Thanks to the shift in popular culture towards disposability, the image has taken on a new role in architecture as a placeholder for #wip (work in progress). This phenomenon finds similarity to the bygone Romantic period of the nineteenth century, whose authors wielded the Italian capriccio techniques of Canaletto to represent buildings as ambiguous fantasies. Revived first by Aldo Rossi in the mid-1970s, this practice has had a well-documented impact on architecture culture in the late twentieth century through today. The evolution of the capriccio has accelerated over the last decade and has done so without extensive contextualization. By reappraising some of the Post-Canalettan era, a view of our present begins to unfold that helps to project the future of architectural delineation. By juxtaposing images created in the Romantic period to images being produced in our present, "We Are All Romantics, And That Is Fine" exposes the radicality of an architecture that presently strains against late-period structural de-signification. Without a clear means for categorizing and summarizing the trajectory of contemporary practice, the bodies of work that are unfolding appear to draw from increasingly disparate and eccentric points of view. The result is an apparent restlessness and gravitation towards illusion and fancy. With this comes a sense that we are approaching some new form, one in which the images of architecture project freely and unselfconsciously associate with the contexts and illusions of a constructed reality.

What Can Windows Learn from Pictures?

Jonathan Louie, Syracuse University

What can Windows learn from Pictures? Lately, it seems, the architects concern has been relegated to specifying and locating the Window, and manufacturers imbue Windows with other characteristics, but, for centuries we have understood the Window as a metaphor for media that represent reality, the real, in art. The article highlights windows and projects whose aims are to connect visuality with architecture by reclaiming the view through the window as a collection of material stuff that establish the visual and informational range of the subject beyond; linking seemingly immaterial imagery to the presence of matter.

Personal Space

Farzin Lotfi-Jam, The Cooper Union
Jaffer Kolb, Parsons The New School for Design
Caitlin Blanchfield, Columbia University

Our things are everywhere. Pictures of personal affects (and affective environments) proliferate digitally: framed for home-sharing platforms like Airbnb, the backdrops to Skype calls, even televised interviews, destabilizing and recasting how we perceive our personal spaces. While still emerging and still transforming, online intimacy and intimate digital spaces have generated communities whose personalization of environments flattens distinctions between public and private; between inside and out; between small and large. In scrolls and streams, bedrooms sit alongside beaches; public parks alongside bathrooms; offices alongside sofas—circulating in new networks by virtue of their imagability.

In these networks, objects signify taste, trustworthiness, worldliness, wealth, and lifestyle. They begin to construct (through hiding) the very environments that they suggest, displacing “the interior” with the careful constructing of an *image* of that interior, such that the interior itself becomes dynamic and unfixed. In other words, through these pictures of objects, spaces take on new forms. Framed, staged, and shot, objects create scenes in the flattened world of the screen. They also exist in the realm of the real, prompting us to consider the reciprocal relationship between an environment and its image.

This paper examines the emergence of this relationship and its implications—identifying an economy of objects in which value accrues through imageability, while understanding how imaging reconstructs space. As social media apps and platforms proliferate, their increasing emphasis on image culture and capitalization of aesthetic sensibilities constricts how objects are depicted and thus limits their meaning; the messy bedrooms of craigslist classifieds have ceded to the millennial pink penthouses of instagram influencers, constricting the kind of subject imaging—and imagined in—the contemporary domestic landscape. How can looking to a modernist history of domestic interior photography and a more recent past of digital intimacy help us to chart the rise of our contemporary object/image economy and offer strategies to subvert it? And further, what stake do architects have in that transformation? How might we use this collapse to reimagine scale; to reconstruct domestic space; to reconfigure logics of the interior?

After the Flow - Architectural Urbanism(s) in the Post-Digital Era 2

Thursday, March 28, 2019
2:00 PM-3:30 PM
Westmoreland
Moderator: Martin Haettasch, University of Texas at Austin

Political Bazaar - Dematerializing Societal Numbness

Nojan Adami, Academy of Art University
Mark Mueckenheim, Academy of Art University

In today's frequent power exchange between historically privileged groups and marginalized ones, the question of architecture's role in transcending its footprint is a critical one. The public life of streets, plazas and parks no longer allows for the friction of competing ideas to interface, replaced by virtue space, vast urban place, and policing. This project proposes a series of public spaces, a political bazaar, which occupies San Francisco's Civic Plaza. Overlapping activities are arranged as an urban corridor capable of constructing a dialogue that extends well beyond the politics of this particular city and place.

This speculative proposal for an underground market, and redefined open plaza above, establishes a new active street culture for the San Francisco civic center. Re-envisioning the urban axis as a potential zone of constant friction and high rates of retail turnover rejects models of urban permanence in favor of research that shows higher political tolerance in heterogeneous and dynamic spaces and places. It also is an urban proposition that engages the city in non-traditional ways, replacing visibility and openness with instruments of invisibility, darkness, enclosure and density. Right beneath the monumentality of Civic Plaza, a place that is increasingly devoid of public debate despite the diversity of socioeconomic groups in the Bay Area, the political bazaar makes its presence known in indirect ways. It slowly entices the public to enter underneath the plaza into a chaotic public life of debate disguised through the political act of shopping.

A below-grade reinvention of the of the historic bazaar typology connects high-density markets with civic life. Further and refined typological revisions also recur at the level of each individual market booth, ensuring a continuous and constant interplay of architectural, spatial, cultural and programmatic forces. Friction is choreographed to combat urban numbness as a distinctly political act of architecture, one that reverberates across the ever-homogenized urban plateau of the contemporary U.S. city.

Homes Without Quality

Brittany Utting, University of Michigan

The developer's catalog of homes is the most persuasive author of the suburban landscape. This database of houses—a combinatorics of style and typology—constitutes a logistical regime of wealth distribution, territorial acquisition, and aesthetic management. The catalog's listings of architectural style and model number establishes a strategy that leverages the iconography of the home to clad otherwise identical floor plans. The question then arises: what becomes of the standardized, market-generated plan in a post-digital city? These domestic objects—generic in disposition and typified by the city—are an alternative to the positivisms of parametric urbanism, proposing architecture as an open framework, one through which we can construct new models of collective life, leisure, and labor.

Each of these model homes is an abstraction of the programs of domestic life: where to eat, sleep, bathe, work, and play. By reducing the home to a series of rooms specified by furnishings and fixtures, the generic diagram allows us to decouple the home from the flows of wealth, debt, efficiency analytics, and market-driven data that manage suburban inhabitation, instead serving subjectivities not currently accommodated. This project constitutes a new formal paradigm to counter parametric flows of suburban deployment and compliance, co-opting the ethos of mass production and typological reconfiguration to produce new models of cohabitation, consumption, and production.

Employing deadpan combinatorics, material distribution systems, and organizational logistics, this alternative set of model homes appropriates the same paradigms of abstraction employed by Levittown and the Sears Catalog to reconstruct the 'useless machine' of development. The appropriation of the catalog's indifferent mechanism of house deployment leverages the open frame of the domestic generic to produce a new suburban landscape. Tying political embodiment to architectural form, these new permutations belong to a more radical catalog of domestic models—characterized by minimalisms and excesses, exotic layouts and redundancies. The positioning of each model in its lot results in a more exotic urban space, one that resists the homogeneity expected from typical suburban developments. Each type becomes a proxy for new patterns of occupancy, use, and commerce within and around the home. The resulting suburban terrain creates new confrontations, new courtyards and clearings, more obstructions but also more routes and itineraries.

Characterized by typological excess and topological diversity, this catalog constitutes the protocols for a new suburb, an alternative fabric in which to inscribe more varied forms of public and private life. These unfamiliar re-arrangements of domestic objects suggest new forms of collectivity and kinship within the monumentalized suburban field. They make space for habits negotiation and cooperation, inevitably generating new hierarchies of power and territory; they enact alternative patterns of use, ownership, and occupation to challenge conditions of access, stewardship, and consensus. Rather than participating in the dominant paradigm of suburban development—the mass-customization of signature homes—there is instead a new litany of domestic models.

This catalog of Homes Without Quality appropriates the generic framework of type to resist the market of lifestyle-as-image, enacting architectural form as political form.

Four Idioms, One Home

Andrew Colopy, Rice University

House or Apartment? Neither. Enter the Accessory Dwelling. Affordable housing for the sharing economy. Domesticity for today's non-nuclear family.

The turn to legitimacy for this once informal housing type is sensible. Accessory dwellings offer real potential to lower costs, increase density and diversify housing options within an otherwise intractable suburban expanse.

Yet, as a subjugated type—second always to a primary dwelling—they pose a challenge to the conditions of privacy, security, and comfort that "home" has come to represent. Indeed, if not imagined anew, the conventional secondary dwelling may serve to index and deepen the disparity of our era.

What's needed is a diverse set. Difference in size, position, and presence. Not each individually—an impossibility—but en masse. The conventions of being second—smaller, backgrounded, isolated—are the inequalities that establish inequity. Diversity is created neither by total opposition nor incremental addition: either—or, both—and… not enough. The part-to-part is insufficient. The whole must set the terms. Community through the uncommon.

Here are a set of four idioms. They reside in front, side, and back. Necessarily small, then sometimes expansive or at least seemingly so. If isolated, then communal.

We invite you to follow "A," who meanders through a day at home.

Shaped Places of Carroll County New Hampshire

Cyrus Penarroyo, University of Michigan
McLain Clutter, University of Michigan

Shaped Places of Carroll County New Hampshire speculates on the complex reciprocity between who we are and the shape of where we live; between identities and the built environments that support them. Culminating in the design of three linear cities, the project seeks to geometrically organize population at a geographic scale to carefully prescribed ends – drawing upon a seemingly unlikely set of protagonists and sources from Frank Stella to M.A. Ochitovic, and from American formalism to critical geography. Forced to co-exist, this melange informs strategies for co-existence; for patterns of urbanization that urbanize the rural while ruralizing the urban.

A notorious swing state, New Hampshire remained purple on the U.S. presidential election map until late on November 8, 2016. Several factors underlie the state's indefinite political leanings. New Hampshire is a microcosm of the political divide between liberal urban and conservative rural populations that increasingly characterizes the United States as a whole, and the state has been gerrymandered to the benefit of conservative politicians. The latter action profoundly impacts the political reality of the state through the figuring of invented geographic shapes. Shape and content forge a complex reciprocity.

Irregular Polygons In his 1966 essay, “Shape as Form: Frank Stella’s Irregular Polygons,” Michael Fried applauded Stella for a very precise quality. Each painting in the Irregular Polygons featured a shaped canvas containing geometric bands of color within. Fried noted that it was impossible to determine whether the geometry of the stripes dictated the shape of the canvas or vise-versa. For Fried the mutual dependence between colored bands and canvas support prohibited all meaning external to the form, securing the status of high art. Shape and content forged a complex reciprocity.

Census Places Each painting within Stella’s “Irregular Polygons” is named after a town in Carroll County, New Hampshire. Many of these towns are also Census Places. The shapes of Census Places are rarely defined by sensible markers or physical features. Rather, it is the instrumentalization of policy and control of population within the Census Place that makes its shape real. Shape and content forge a complex reciprocity.

Linear Cities Shaped Places recalls the visions of Russian Constructivism in which the linear city was a tool to unite urban and rural populations. These unbuilt examples deployed repeating planning units along infrastructural lines composing housing, production, institutions, nature, and collective space. Rural and urban populations were meant to merge as one public for the Revolutionary State.

Shaped Places has three sites, each a Census Place – Sanbornville, Union, and Conway. In each site, the formal logic from a Stella canvas is applied to the shape of the eponymous census place to yield zoning bands. Along these bands, linear city planning modules would be deployed, contorting to the shape of their geographic host to elide rural and urban populations. Within, each inhabitant would find herself perpetually confronted with the other, perpetually usurped within the body politic, by design. Shape and content forge a complex reciprocity.

Thesis or Moonshot? Breaking the Traditional Portfolio to Practice Pipeline

Thursday, March 28, 2019
2:00 PM-3:30 PM
Westmoreland

Moderator: Matthew Claudel, Massachusetts Institute of Technology
Anthony P. Vanky, Massachusetts Institute of Technology

Agency and Immersion: Design Build, Social Innovation & Social Entrepreneurship

Kenneth Schwartz, Tulane University
Byron Mouton, Tulane University

We believe that architectural curricula can, and often do, include tangible experiences that provide unequaled immersion that builds agency toward a productive and innovative career trajectory.

We know this is the case, because we have been testing this premise for thirteen years now. The questions have always been: how can we empower students to exercise their creativity in a way that produces tangible results in collaboration with the community (design build), and how can we inculcate and reinforce values that support positive social change through the design excellence, ambition, dedication, and compassion of students?

Undergraduate students (fourth and fifth year) and upper level graduate students have designed, developed and built thirteen houses since 2006 through the URBANbuild program. These projects are led by a faculty member and financially supported by the school. A house project begins in late August each year and by early May, the house is ready to go on the market. The houses are progressive and experimental in the way they explore different strategies for the creation of affordable housing. They are individually and collectively entrepreneurial, developed in collaboration with a local non-profit housing organization which provides the sites, while advising, selecting and approving potential homeowners. Several years ago, the dean secured a gift from a donor which allows the program to operate essentially as a revolving fund; the school provides all of the funding necessary for these houses and the instruction required for this program. The capital investment returns to the school with each sale, and we share the modest profits with the non-profit organization. As a social entrepreneurship venture, the work of students and faculty has not only resulted in a portfolio of impressive houses and house designs, it has also served to help a struggling neighborhood to turn around in a more positive and stable direction. It is also a self-perpetuating enterprise.

Inspired by the work of this architectural education innovation, the school later launched a highly successful university-wide minor in Social Innovation and Social Entrepreneurship (SISE). Architecture students, and students from across the other four undergraduate schools, have pursued this sequence of courses as a way to develop their own strategies for positive social change. The founder of URBANbuild was in the first cohort of 10 individually endowed Social Entrepreneurship university-wide professors, teaching one of the required courses called “Design Thinking for Social Change”.

In relation to the overall theme of the ACSA Conference, this example is NOT a Black Box. It is decidedly open, transparent, inclusive and accessible. These programs attract diverse students and with a track record of over a decade now, evidence of the collective impact in terms of a neighborhood (URBANbuild projects) and careers (SISE minor students) is clear. Architectural education benefits from engagement in “….the messy vitality over obvious unity” (to quote Robert Venturi). These two programs suggest a different kind of professional future for our students as compared with more traditional notions based on the intentional or unintentional hermetic tendency of inward-focused pedagogy.

Design Studio: The Case for Social Entrepreneurship

Nilou Vakil, University of Kansas

This paper outlines a participatory development strategy first tested and adopted in practice and now being reoriented as a studio design process. Two case studies from practice will be explored that provide unique strategies for empowering community. These crowdsourced projects pool resources and expertise in order to design and build projects that resist gentrification, stimulate investment, and build community. We then explore the translation of this process into an educational experience where students work directly with neighborhood residents to utilize the participatory actions of establishing a pro forma, acquiring land, securing financing, selecting professional engineers and contractors, and ultimately constructing the project all as larger components of community building.

The professional models of community development presented here offer an alternative to the traditional designer-client dichotomy and allow the once-clear boundary between architect and client to be redrawn. The potential of the educational model is more profound. It empowers students to chart a path that rejects a discipline rooted in form-making and aesthetics. It teaches the process of architectural design to be one of entrepreneurship. Students act as community organizers in setting up the framework in which community members are able to become active participants in their built environment.

Complexity, Interdisciplinarity, and the Real World:
Meaningful Collaboration in a Seminar Setting

Traci Rose Rider, North Carolina State University

The architecture profession is shifting in scope, engagement, responsibility, and processes. The traditional journey of professional preparation for architects is proven and established,but does not readily adapt to the dynamic contexts of the profession. Real-world problems are largely simulated through in-person studio and professional practice courses, which often foster the disconnection of the architecture student, both from other disciplines as well as from real-world application. To align with the changing context of the profession, the standard curriculum is being asked to incorporate issues such as tactile experimentation and entrepreneurship. Programs are also asked to address expanded knowledge around standard issues like energy consumption and stormwater, as well as those previously seen on the periphery, such as food production and human health. This paper highlights two seminar courses that speak to three critically important issues for future practitioners: (1) growing knowledge in important topics cutting across building types, specifically building operations and health; (2) meaningful collaborative, interdisciplinary teamwork; and (3) engagement with real-world projects, practicing professionals, and clients. This paper presents course objectives, course structure, real-world collaboration methods, and feedback from students in architecture and other engaged disciplines. Specific attention will be given to team building exercises and differing disciplinary approaches to the problem topics, sharing results from different student assessment methods. Additional opportunities for future research are identified.

Drawing Attention

Thursday, March 28, 2019
4:00 PM-5:30 PM
Cambria East

Moderator: Carl Lostritto, Rhode Island School of Design
James Tate, Texas A&M University

Arc182: Drafting and Drawing

Jonathan Louie, Syracuse University

While drafting and drawing have a few things in common: both begin with a mark, both are an assembly of points and lines, and, both are an act of representing a subject. Despite their similarities, its' fair to say in they stand miles apart in the act of creating a building, and broadly, practice versus project. In a society where images are altering our habits of communication and interpretation.1 Arc182 reconsiders commonly taught drawing types, then focuses on projective examples of As-Found Drawings that productively misread the distinction between communicating through drafting and accessing ideas through drawing. Begging the question, if architectures means and ends rely on imaging, how can architectural ideas develop from mixing meaning in its' images?

The Double or, an Architecture of Estrangement

Francesco Marullo, University of Illinois at Chicago

Drawing from Dostoevsky's novel *The Double* and El Lissitzky's *Prouns*, the essay meditates on the estranging effect of the axonometric vision, considered not as a mere technique of representation but as a project of awareness: as a method to dissect reality, to reveal its constituting mechanisms and the way it functions.

Dostoevsky's free-indirect-speech and El Lissitzky's reversible drawings transformed axonometry into a machine generating images for understanding rather than seeing, for distancing more than seducing, questioning rather than persuading, analyzing more than illustrating. Deliberately rejecting the tyrannical vanishing point of perspective, the parallel projection is un-appropriable and collective being undefinable within the limits of a single observer, indifferent to either top-down or bottom-up constructions, and rejecting unified notions of audience, gender, standards or any other molar generalization such as "the people."

Within and against an architectural production that rapidly transforms everything into a visual episode, wherein communication often counts more than the message itself, consumption more than production, curation more than creation, circulation more than content, the ubiquitous alienating distance that separates us from our selves, lives, and actions, could be reversed into an instrument for self-consciousness and collective valorization.

Learning from Dostoevsky and Lissitzky's axonometric visions, the critical process of architectural drawing becomes useful not just to penetrate reality in all its aspects, but also to look at ourselves and at the conditions in which we live critically, to re-appropriate our will to action and reestablish a meaningful relationship with others.

Visceral Data - Observations of Point Clouds

Leslie Forehand, Iowa State University

In the essay ‘Clouds’, Marcel Beyer describes an enduring year studying and elucidating the scholarly production of clouds. He proceeds to describe nephology, or the study of clouds, as a vertigo-inducing process because ‘the object under observation – be it an individual cloud photograph, be it scientific cloud observation as a whole – ceaselessly asks back: How do you observe?.’[i] This paper extends the same process of observation into clouds of data, or point clouds. Point clouds are the result of advanced surveying techniques that engage laser measuring and photo-stitching, resulting in a ‘cloud’ of points. This dataset typically has an intermittent existence – its primary purpose is to be translated into polygonal mesh surfaces. This paper outlines pedagogies that ask students to observe and digest the purity of the cloud, developing digital and manual drawing techniques as a means of analysis. Two courses are presented with varying constraints and propose explorative strategies for addressing expansive digital surveys such as point clouds.

[i] Beyer, Marcel, and Helmut Völters. 2011. *Wolkenstudien = Cloud Studies = Etudes des nuages : [... anlässlich der Ausstellung "Wolkenstudien - Der wissenschaftliche Blick in den Himmel", Fotomuseum Winterthur (26.11.2011-12.2.2012)]*.

Strange Attractors and Wonderful Automatons

Carolina Dayer, Aarhus School of Architecture

Humans have dreamt with the existence of autonomous artefacts since time immemorial. From walking ducks to quasi-human robots, ingenuity has succeeded in the production of machines able to spark wonder. In Studio XX we ask the question: how can we imagine with machines? If our engagement with digital and mechanical technologies is so strongly rooted in how we work and produce architecture, the studio pedagogy focuses on pondering the role of machines as a creative tool for conceiving and reflecting upon architecture. Through the notion of Strange Attractors, both in its mathematical but also cultural and philosophical definition, the studio begins with the making of drawing machines as artefacts of wonder to ponder key architectural questions that will continue to be developed throughout the semester and academic year.

Architecture of Attunement and Planetary Ecology2

Thursday, March 28, 2019
4:00 PM-5:30 PM
Cambria West
Moderator: Dana Cupkova, Carnegie Mellon University

Choreographing Attunements among Intelligent Agents

Bradley Cantrell, University of Virginia
Zihao Zhang, University of Virginia

Since the late 1990s, the discipline of landscape architecture has developed an ecological framework that can be characterized by systemic thinking, strategic and process-based design methodologies. This paradigm shift can be paralleled with several intellectual and theoretical developments that move away from epistemological and contextual concerns stemmed from the 20th century "linguistic turn" to ontological concerns in a posthumanist framework characterized by a revival of materialism and the ascendency of object-oriented ontology (OOO) and machine-oriented ontology (MOO). This paper takes Morton's concept of attunement and tries to articulate a relational framework that can be described as an effort to choreograph attunements among intelligent agents so that different species and forces can co-evolve in landscapes and co-produce the environments. Bring the concept of intelligence into the discussion, this paper gives some preliminary thoughts on the current developments in artificial intelligence and machine learning, as well as their applications and implications in the design disciplines. The paper argues that the design disciplines need a broader definition of intelligence based on posthumanist frameworks and need to abandon the embedded anthropocentrism and individualism in the definitions of intelligence in AI research in order to fruitfully choreograph attunements among intelligent agents of which intelligent machine is a part.

Expressive Superorganisms

Marantha Dawkins, Carnegie Mellon University

This paper outlines a symbiotic mode and model for design, drawn within discussions of expressivity, subjectivity, and multiscalarity. The figure of the superorganism represents an ecological being, open to fluid communication and unbound from normative frameworks intent upon systematizing technocratic exchanges of human concern. The superorganism extends and enriches notions of embodiment toward the communal coproduction of animate ecological territories.

Geo-Actors

Cathryn Dwyre, Pratt Institute

Over the course of our scant 300,000 years on earth, *Homo sapiens* have moved from reliance on local connections and atmosphere, like most species, into a complex tangle of global networks and galactic atmosphere through tools such as communication, extraction, infrastructure and imaging. As others have pointed out, it follows that human perception is likely massively out of synch with these technologically accelerated timeframes and global geographies. In the evolutionary sense, as a species we could very well be glitching, as these asynchronous bands of geological time and geographic space overwhelm human sensation. Or *Home sapiens* may, as is suggested by the concept of *attunement*, be developing rapid adaptations to these new asymmetries of time, space and technology.

Ecological Teardown

Rhett Russo, Rensselaer Polytechnic Institute

Being Ecological at the Gate What kind of ecological thinking is needed in the core of an undergraduate architecture education? What ideas about ecology are foundational and what should we build upon as student's progress through the curriculum? What are the linkages between ecology and aesthetics that are important to the discipline and how we approach design in the 21st century?

This paper will discuss a pedagogical approach to introduce ecological discourse into the first year undergraduate design studio. The goal is to expose students to an ecology that is, empathetic in its encounter with energy, ontologically flat in its acceptance of all things, and unburdened by ways of thinking that rely on causal explanations. Students are asked to design a house on a 100 x 100 plot that develops its program and domestic energy production. As part of the prompt each student selects a photograph of a disassembled industrial artefact from Todd McLellan's monograph of 21,959 components, Things Come Apart. The photography embodies an ethic of completeness and attention to detail that cannot be conveyed otherwise and great efforts have been made to track down every last piece of the objects, so that by and large it is possible to qualify the photos as being complete.

Futures and Pasts are Part of Being Ecological According to Morton our experience with objects never allows us to grasp them in the present, this remains beyond access, rather objects are revealed to us in slivers through their past and in the future. Nested within McClellan's book are five anecdotal texts that identify the forces that permeate the ecology of industrial artefacts. Contrary to the documentary format of the photographs, as the number of parts increases the more uncertainty they evoke and the students tend to avoid the confrontation. The texts written form the viewpoint of different disciplines inconspicuously identify five general categories of attunement that pertain to the world of machines and artefacts – tearing down, groking, tinkering restoring and joining all of which bear some resemblance to architecture.

What’s the Matter with Climate Change?

Thursday, March 28, 2019
4:00 PM-5:30 PM
Fayette

Moderator: Rania Ghosn, Massachusetts Institute of Technology

Pipes, Levers, Walls, Rocks and Water: The Architecture of Niagara Falls

Jessica Colangelo, University of Arkansas

The phenomenon of global climate change has brought about a pressing need for designers and architects to rethink how we construct relations between humans and the earth. A technology-based approach has been the primary tool of the building industry to engage climate change through performative building systems. While this approach is significant for lowering the carbon footprint of singular buildings, it does not alone offer an adequate model for architecture to address the increasing concerns of climate change. To examine the potential for architecture to form new relationships between the natural and the built environment, this paper traces the history of one of the largest artificial landforms in the United States – Niagara Falls. As a technology-laden hyper-designed earthwork-fountain, Niagara Falls is an imaginative resource for architects to further a cultural and aesthetic approach towards issues of climate justice.

Tales of the Anthropocene: A Spatial Narrative of the Environment

Julie Larsen, Syracuse University

The anthropocene, the new geological age, characterized by long-term climatic change and the commencement of significant human impact, is a result of industrialization, on the earth’s geology and ecosystems. While architecture itself cannot provide universal solutions, as urgent environmental threats become increasingly more visible, the role of architecture can help facilitate the understanding of those effects of climate change on our current culture. Architecture, as a material practice, can provide future speculations of environmental shifts on the earth through materialization, visualization, and speculation. Using a series of advanced design studios and seminar work as case studies, the paper aims to address the way in which architects can bring more awareness to significant environmental concerns through visual provocations. Using architectural tools as design research with mappings, drawings, and time-based imagery, visualizations materialize the potential risks and outcomes of changes to ecologies around the globe. With tales of the anthropocene, the focus on form, materiality and spatial narrative reflects how architecture can play a critical role in revealing the impact and effects of human activity on the environment.

Desert Densities - Sensing Atmospheric and Territorial Shifts in High-Density Desert Cities

Ersela Kripa, Texas Tech University

Dust surrounds us, saturating our bodies, cities, and landscapes with a nearly imperceptible airborne geology. Accelerating transcontinental migrations of airborne particulate in the US/Mexico borderland forge shifting binational territories, fluidly permeating boundaries between otherwise distinct nations, jurisdictions, and organisms. The shared geological, biological, and cultural material carried in the dust indexes reciprocal anthropogenic transformations, initiates unseen interdependencies, and has the potential to bind emerging, as-yet unaware constituencies in the region.

Afronautics

DK Osseo-Asare, Pennsylvania State University
Yasmine Abbas, Pennsylvania State University

If contemporaneity represents the always-latest cusp of a next industrial revolution, whereby electronic technology and hybrid cyber-physical systems extend their overlap with geoengineering and computational redesign of the biosphere—increasingly innovation vectors trend toward convergence of digitally-enhanced architecture, pervasive networks and the built environment. At the same time—consistent with degenerate forms of functional dependence—natural resource extraction continues to correlate with non-cyclical processes of material transformation and co-production of consumer goods and lifestyles across planetary scales. Billions of people living on the planet Earth today interact with and through digital space in real-time via visual, oral/aural and tactile contact (exchange) with electronic devices. These devices serve as portable portals into digital terrain hyperlinking physical and non-physical realities—by means of an expanding web of terrestrial and satellite telecommunications infrastructure, strategically located “out of sight and out of mind”.

However, this contemporary regime of the digital is neither immaterial nor neutral. The mass production of machines that store and exchange data files, run software and host virtual simulations, internetworked via cables and radios that relay bytes of information across time and space—including the interfaces that grant us access to the digital domain of human experience—are codependent on exploitation of natural and human resources at a monumental scale and are designed to demand absolute allegiance. Today’s global pandemic of “throwaway electronics” (i.e. digital devices designed and mass marketed as disposable consumer goods) typifies the dominant business practice of “planned obsolescence”—whereby products are designed to fail prematurely and preclude affordable repair, in order to drive market demand—embedded in the viral DNA of neoliberal corporatism which, by virtue of the symbiosis between private sector “economic growth” and sustainability of the state apparatus, contributes directly and indirectly to widespread human suffering and ecocide.

Electronic landscapes—the physical territories polluted by dismantling and processing e-waste (as opposed to the virtual spaces of digital gaming environments)—exist in the realm of the imaginary for much of the West and Global North. For the wealthy and the fortunate, for people who have the luxury of being able to turn a blind eye, these othered spaces remain either invisible or remote, only encountered through sensationalized images of brown-skinned bodies burning wires under the hot sun in a distant country. From the comfort and safety of their own homes, citizens of globalized consumer society can escape the toxic fallout of consumerism—mediated by electronic media—simply by clicking a button on their remote control, closing their browser tab or swiping away on their touchscreen…

This paper interrogates the conceptual paradigm of e-waste (WEEE, or Waste Electrical and Electronic Equipment) relative to Afrofuturist hacks of techno-aesthetic practices. Exploring the Afronautical potential of open-source maker culture, circular economy and co-creation of digital imaginaries to open up a “Third Space” generates new possibilities to deconstruct false dichotomies of West/rest, local/global and physical/digital, while reinforcing architecture’s macro-level affordance for remapping human perception-cognition of reality around climate change.

Fire in the Landscape: Maintaining the Sublime in the American Wild

Marisha Farnsworth, San Jose State University

Last year over a million acres burned in California, encroaching on rural and urban communities in unprecedented conflagrations that included both the largest and the most destructive fires on record. In an equally devastating blow to the state’s forests, the pine epidemic has reached dystopian proportions, claiming a staggering 129 million dead trees. While the recent extreme fire seasons have rendered climate change tangible for many in the West, the tree mortality crisis has made climate change material, creating a resource management situation that our extractive industries struggle to comprehend. This paper reviews current and historical views on ecological maintenance through the lens of the Sierra Nevadas and then explores the materiality of climate change through the narrative of a case study that moves from beetle kill pine forests to a built architectural project.

Being Versus Becoming the Core of Architecture

Thursday, March 28, 2019
4:00 PM-5:30 PM
Washington

Moderator: David Fannon, Northeastern University
Michelle Laboy, Northeastern University
Peter H. Wiederspahn, Northeastern University

Peace Spine - Unifying Walls within Belfast

Mark Mueckenheim, Academy of Art University
Tara Abedinitafreshi, Academy of Art University

In a time in which conflict is expressed in the built environment through the erection of walls and the fortification of borders, an architecture that challenges division by inviting participants to change the space of that division over time, is one that necessarily calls into question the nature of the present state versus future becoming. This project takes on the question of borders by spatializing conflict, and proceeds by using that very architecture to anticipate change. It invites segregated communities to claim their space in a border in Belfast, Ireland, by turning that border into space, allowing participants to change the nature of the architecture and its use over time while attenuating the divisive nature it seeks to overcome.

This proposal inserts public programs in the former division lines erected throughout several kilometers Belfast. Replicating this architecture at key moments along the border produces a region-wide public spine inside of which the citizens of Belfast can claim their space right up against each other. There are two sides to any wall, and in this case the division is along the lines of Loyalists (Protestants) and Nationalists (Catholics). The public spine, which spatialize the border, becomes the third entity which absorbs both sides but only over time. This third becomes a place where difference is not evened out but is celebrated, a place where identity can be reinforced but in a public and inclusive manner. The programmed places will host public activities and ad hoc uses of the space: the Market area answers to the everyday needs of the residents and provides the exchange of goods from both sides; the school of transition is where the children will learn how to co-exist in an atmosphere far from the troubled sides.

Five programs along this border knit, over time, communities together by employing space as a political tool: overlapping and visible activities, common grounds, and a quasi-labyrinth of spaces all invite a weakening of the intensity of difference without outright negating identity. Form, holistic in plan but sheared in section, pays tribute to Roman Classicism. A bold formal experiment of spaces and voids is gently humanized in elevations and perspectives, allowing viewers to glimpse a uniquely architectural future of social reclamation and restoration.

Avis + Elsmere, Time as a Design Tool for Community

Tadd Heidgerken, University of Detroit Mercy
Ceara O'Leary, University of Detroit Mercy

Avis + Elsmere, a project in Detroit, offers a model for collaborative design as the genesis of architecture rather than the solution for architecture. The project rose from a belief that spaces resulting from collaborative, community-led design processes responding to contextual challenges over time create places that strengthen communities. The project is the product of a robust relationship between the client-collaborator, a diverse community stakeholder group, and local architects, educators, and students. It grew from a neighborhood actively tying itself together through art and youth over eight years.

In 2010 residents of Southwest Detroit approached Detroit Mercy School of Architecture’s Detroit Collaborative Design Center (DCDC) to discuss strategies to leverage the neighborhood’s strengths to promote holistic development of youth in urban settings through building relationships, community education, and passion-driven projects. At that time Young Nation aimed to build meaningful relationships between neighborhood youth and elders using low-rider car club and street art cultures. Young Nation is now the client-collaborator for Avis + Elsmere, which now houses the organization’s first permanent office, flexible community event space used for open studios and youth workshops, and a leasable tenant space.

Over the last decade, Young Nation brought architectural educators and students from adjacent communities to build temporary interventions and permanent infrastructure based on expansive community planning discussions. In 2010 proposals and temporary installations developed into a permanent street art gallery and indoor/outdoor workshop, The Alley Project (TAP Gallery). These projects crystallized the community’s desire for a new space. Most recently, Young Nation then invited the architecture firm Et al Collaborative to contribute to the design of an anchoring neighborhood gathering place at Avis + Elsmere.

Avis + Elsmere spaces and materials resulted directly from the collaborative design process and speak to the neighborhood’s identity. The north facade extends out from a large community living room onto an enclosed ‘front porch,’ that follows the line of neighboring porches. This space brings the activity of TAP Gallery to the front of the building and the main corners of the neighborhood. The mural enveloping the project was designed by a late street artist and completed in tribute by an alumnus of the youth program. A metal screen fabricated by local iron workers provides security and allows for transparency while referencing the wrought iron fences prevalent in the neighborhood. The project faces an unrealized plaza, also designed by neighbors, DCDC and Et al, which will include market space, a stage, and a skate park to be built as community resources allow.

Avis + Elsmere is also now the hub of a new master plan developed by the community and the original collaborative design group that started the conversation in 2010. This plan connects several neighborhood organizations via an extension of TAP Gallery into the larger network of area alleyways.

Avis + Elsmere is sited in a social context that uses it as a point of departure and a goal post. The project is a living organism composed of a multitude of people and perspectives constantly shifting direction.

Permanent? Ageless? A Case Study of the Pulitzer Arts Foundation in St. Louis

Liane Hancock, Louisiana Tech University

In 2001, the Pulitzer Foundation for the Arts opened in St. Louis. Designed by Tadao Ando, it was a new landmark in a beleaguered portion of the city, a veritable monument to reinforced concrete. The dream was that it would act as catalyst to revitalize the Grand Avenue Arts district. For Tadao Ando, it was an opportunity to introduce himself to the international stage, and to continue to build a reputation in his home country. At the same time, the owner, Emily Rauh Pulitzer, had not yet decided exactly how her new institution would operate.

Comprehending the significance of this new building as an illustration of Tadao Ando's expertise, the design and construction team developed systematized preservation methods even as the building's walls were being poured. The intent: to keep the building forever young. At the same time, the open ended nature of Ando's design process meant the design and construction team incorporated redundancy for the internal infrastructure of the building, a method that would later prove valuable as the Pulitzer's programming and use changed. Finally, the decision to select the project superintendent as head of operations allowed the laboratory-like atmosphere created during construction to carry over into maintaining the building. This paper endeavors to relate the preservation and adaptability of the Pulitzer Arts Foundation to observations on how permanence is viewed within the built environment both in Japan and the United States, presenting best practice protocols for both preservation and maintenance developed by the Pulitzer.

Flexibility and its Discontents: Colquhoun's Critique of the Pompidou Center

Jonathan Ochshorn, Cornell University

All buildings change or, as Stewart Brand argues, they "learn"—often badly—over time. In fact, a time-based understanding of the life cycle of different building systems is a key component of building flexibility, preventing relatively short-lived ducts and conduit, for example, from being embedded in relatively long-lived structural elements. Yet even taking such advice to heart, making buildings truly flexible is not easy, since both culture and technology change in ways that simply cannot be predicted. This paper focuses on Alan Colquhoun's critique of the Pompidou Center in Paris (1977)—the competition-winning museum designed by Renzo Piano, Richard Rogers, and Gianfranco Franchini (along with Peter Rice of Ove Arup & Partners)—in order to dig a bit deeper into both objective and subjective aspects of flexibility that relate primarily to size and geometry. Big spaces have been linked to flexibility, freedom, and generic form, i.e., form without particular expressive or articulated qualities that might otherwise, somehow, constrain unanticipated activities. The idea of a generic loft-like space in which anything might happen—a particular and persistent vision of both utopian and dystopian flexibility—shows up in theories of modern architecture in many contexts. Alan Colquhoun, for example, in his 1977 essay, “Plateau Beaubourg,” criticizes such values, but his arguments against the Pompidou Centre in Paris remain problematic. In this paper, I examine and critique Colquhoun’s attitude toward fixity and flexibility, exterior expression of interior functions, architect-designed user-controlled elements, and the complexity of modern life.

After the Flow - Architectural Urbanism(s) in the Post-Digital Era 2

Thursday, March 28, 2019
4:00 PM-5:30 PM
Westmoreland

Moderator: Martin Haettasch, University of Texas at Austin

Examining "Order in Disorder": A Speculation into Space, Time & The Human Subject, in Context of Urban Villages in Delhi

Sourav Banerjea, Ansal University
Abu Talha Farooqi, Ansal University

Urban villages in Delhi are as undefined, diverse and peculiar as the other facets of the country. Delhi has at least 135 urban villages, all of which once existed as rural settlements. This transfer of identities kept such villages from the jurisdiction of the various urban development authorities and plans, as an act of preservation of rural habitation. But in due course, have become a free-reign for the villagers to use their share of lands for 'arbitrary, unregulated' purposes. This random growth has led to a culture defined by unpredictable, yet continuous change, since the permanence of life for these settlements rests upon the 'Fragility of Moments'.

The 2001 published book, "The Unknown City", enunciates the existence and possibilities of 'Architecture and the City', in tandem, while opposing the trusted notion of 'urban professionals' – the ones who consider themselves as the producer, negotiator, advocator, shaper of space and form. In debate, it presents an alternative discourse concerning deeper systems of power, economics and social signification, that shape architecture, and hence the city.

Exploring a similar argumentative construct, this research, based on the triad of space, time and the human subject, strives to suggest and explore possibilities for developing newer understandings for the Capital City of Delhi and its enormous network of the fragmented identities, commonly known as Urban Villages within the planning framework of the country. The research would attempt to expose various forms of activity, both conscious and unconscious, that shape the objects and meanings which constructs the reality of these urban villages.

Erasures, Transgressions, and Demarcations:
Site Tactics for the Post-Internet City

Zachary Tate Porter, University of Nebraska-Lincoln

The contemporary city is an increasingly homogenous environment shaped by the combined forces of investment, gentrification, and displacement. While many speculated that the integration of digitally-networked technologies would make the city more equitable and transparent, such a promise has not been delivered. In this context, architecture must reevaluate its role in the future development of urban space. This paper frames these dynamics through a discussion of urban site tactics, examining the formal articulation of architecture's relationship to the city. Drawing upon examples from architecture, technology, and art, three specific tactics are introduced and evaluated: *erasure*, *transgression*, and *demarcation*. Ultimately, the paper argues for strategies of *demarcation*, which emphasize–rather than obscure–the fundamental difference between public and private space.

Movement Parasite:
Parking Management through Legislation and Objects

Masha Hupalo, Aarhus School of Architecture

The current paper articulates a relational logic of parking spaces and its strategic employment. According to Michel Serres, the parasite "is, first of all, the elementary relation" that constructs the subject. Seen in this way parking is the parasite that marks a beginning and an end of every trip. These nodes of stillness can influence movement and with it an urban fabric in which this stillness resides. Two different urban fabrics and approaches are explored in case studies: an array of surface parking lots in Downton Los Angeles and a monumental parking garage of the Mountain Dwelling in Copenhagen. What this analysis brings forward is the potency of an architectural object to enhance the effect of the spatial software of planning legislation. There is no opposition between thinking of the city in terms of flows and arranging spatial compositions of buildings. Instead, the movement parasites of parking can be deployed as strategic catalysts in a broad regulatory field.

Being There:
International Studio Pedagogy in the Post-Digital City

Igor Siddiqui, University of Texas at Austin

The relationship between architecture and the city is explored through the teaching of an international, travel-based studio, a collaboration between the University of Texas at Austin and the École Nationale Supérieure d'Architecture de Paris-Belleville. The notion of the post-digital is primarily explored through the aspiration of post-spectacle in architecture. The paper captures a preoccupation with 'being there' not as a dogmatic stricture nor a nostalgic retreat to a fantasy of a pre-digital reality, but rather as a sense that physical presence – in learning, in design, in our making and experiencing of buildings and cities – is indeed, undeniably, worth something. The studio teaching discussed in this paper actively explores this value in the making of architecture in relation to the city. Specifically, the paper focuses on (1) studio as a model for practice, (2) developed mechanisms for studio collaboration and exchange, (3) urban construct of the block as a framework, (4) use of housing as design prompt, and (5) working methods of the studio as reflections of core disciplinary knowledge.

Delirious Data

Friday, March 29, 2019
2:00 PM-3:30 PM
Westmoreland

Moderator: McLain Clutter, University of Michigan

We're All Counterinsurgents Now

Britt Eversole, Syracuse University

The increasing presence of robust, information-laden, parametric architectural and urban models has outpaced a critical evaluation of the ethics of contemporary modeling and visualization practices. This essay examines a decade-old RAND Corporation endeavor to envision a comprehensive digital counterinsurgency strategy for the Pentagon. The Integrated Counterinsurgency Operating Network (ICON) was based on weaponizing open-source, big-data urban models and platforms to create multicultural, user-friendly interfaces that would facilitate information exchanges between coalition soldiers, civilians and insurgents. Rather than anticipating new remote sensing and top-down, high-tech surveillance, RAND took advantage of existing technology and focused on the cognitive and affective side of digital participation and information sharing. It also anticipated marshalling a cadre of intellectual and professional agents, as well as on-the-ground, unwitting civilian agents to populate databases with urban and environmental information. Overall, ICON was conceived to look like an exercise in open-source digital democracy and participatory knowledge-sharing, one that would spark emotive responses such as pride and fear. The elegance of RAND's proposal—to use architectural and urban models as a means of waging a counterinsurgency in the minds of civilians and insurgents—problematizes any objective perspective on the part of designers regarding the modes of modeling that they engage in and produce. When the models architects build can be weaponized to ends other than realizing a building, a neighborhood or a city, when they become instruments used by others to influence behavior and to facilitate warfare, there is an urgent need for an ethics of visualization.

Office-Party

Brittany Utting, University of Michigan
Daniel Jacobs, University of Michigan

Within the data-driven delirium of immaterial labor—flows of information, productivity surveillance, and efficiency analytics demanded by corporate interests, managerial consultancies, and office furniture designers—this proposal seeks to co-opt these tactics of digital management to produce an alternative ethos of work. The implications of these techno-disciplinary devices on the bodies and actions of workers are both performative and aesthetic, and as such can be appropriated to re-empower those surveilled and the quantified to produce new spaces—both physical and virtual—of resistance.

Traditionally, office contract furniture is sold as a fixed system with a layout determined by the data-driven protocols of efficiency management. Today, companies like Herman Miller and Knoll are rapidly integrating data-gathering systems and automation protocols into the furniture itself to track worker productivity, anticipate ergonomic desires, and algorithmically predict optimal layouts and postures.

Corporations such as Google and Facebook advertise their offices such that it is impossible to distinguish between leisure and labor, ideologically conflating office hours with after-hours activities. In what ways can these digitally-analyzed and computationally arranged terrains of labor be reframed to deny work, encourage unproductivity and play, and insist upon a new metric of quanta and performance while remaining situated within the contemporary rhetoric of corporate-utopian “playbor” offices. OFFICE-PARTY proposes the design of the office through rogue B(I)M, a condition that exists parallel to the regimes of data-driven productivity and performance paradigms, to enact a more radical Building (mis)Information Modeling platform. This software allows users/workers to alter and undermine these furniture systems to to create absurd proliferations, unfamiliar re-arrangements, and inefficient clumpings, choreographies and orchestrations controlled by shadow algorithms and hacked efficiency protocols operated in secret by the same employees charged with their maintenance.

… It’s 5:45 and almost everyone has left... The computer screens have flickered into static and the hum of the office has died down... OFFICE-PARTY is not a proposal but a hidden condition, a performance of illicit glances and stolen dances. It’s that moment of complete anomic abandon—a condition of lawlessness, disobedience, and disorder. It’s a moment in which the rules can be set aside, the desks digitally reconfigure themselves, and users can surrender to the the suppressed desire for chaos and motion. Defying the cybernetic flows of efficiency and logistics in the Bürolandschaft office landscape, the workers can remake the frenetic jumble of desks and filing cabinets, creating a clearing instead of a careful row. As the workers gather, at first sheepishly but with increasing eagerness, the fluorescents flick off and the music starts… “A fit of shaking passes over the group” (Dan Graham, Rock My Religion). The dance begins. As the demarcation between life and work slips back and forth, the office party is a radical reformatting of the culture of immaterial labor. The day-time spatial obedience to the digital economies of production is the necessary alibi for a night of pleasure. Pushed to the extremes between the managed and the deviant, the OFFICE-PARTY offers a possibility of refusal within the regimes of work.

Pattern, Noise, Figure, Ground:
Context and the Representation of the Auditory Object

Rebecca Smith, University of Michigan

Similarly to dirt, the term “noise” is often a moving target, defined in relation to what it is not. Whether used colloquially, to mean the unimportant clutter that gets in the way, or in relation to sound itself, it is a definition which is fundamentally reliant upon context and patterning for meaning. Taking the challenges inherent in the architectural representation of noise as a starting point, this paper explores the ways in which issues of patterning, context, and figure-ground relationships are common across architectural representation, auditory perception, data-driven representational techniques, and the relationship of subjective perception to the production of scientific or objective knowledge. Initial representational studies are presented, with the aim of identifying and illustrating underlying tensions in these areas. A few relevant frameworks for approaching these challenges are also discussed. These include architectural perspectives on materiality, variability and embodiment from Antione Picon, Caroline Jones, and Mario Carpo; Steven Feld’s ethnomusicological framework of “Acoustemology”; and Donna Haraway’s “Situated Knowledges”.

Neo-MDF: Material Data Form

Oliver Popadich, University of Michigan

Anthropologist Tim Ingold offers a description of material in three parts – *medium*, *substance* and *surface*.[1] Using this framework, computer scientist and anthropologist Paul Dourish unpacks one way in which data can be considered material: if data is the *substance* and software is the *medium*, then the *surface* is the software’s representation of this information.[2]

In other words, we perceive the representation of data as a *surface*.[3] However, being a virtual entity, the material data must manifest physically as part of the *surface* of a physical material (as light, print, toolpath, etc.), thus becoming embedded within the qualities of that material. From truss to trim, modern *surfaces* depend on data and the management of said data, can motivate the *appearance* of architecture in new and unexpected ways.[4]

This project posits that contemporary materials are not a single entity, rather a combination of physical and virtual qualities that manifest as a hybrid-material. These hybrid-materials are palpable, driving a phenomenological experience ultimately derived from their digital underpinnings.

The proposed building is a fusion between library and data center – an embodiment of the history and evolution of our production, storage and consumption of information. Bisecting these programs are the distinct ceiling planes, produced through displacement and normal mapping – rendering processes that imbue *surfaces* with material qualities like texture and form. By working within these rendering methodologies the project contends with the layered relationship between data and material and their physical formation as objects.

It becomes clear that the world around us is designed for and by data. Some things, like the ceilings and trusses are designed as translations of data into form; others, like cables and screens are designed to transmit data from place to place. As the concept of “glitch” become materialized and the mutability of information is questioned, hybrid-materials put new pressure on our understandings of temporality, presence and separation, ultimately, redefining the roles and objectives of designers.

[1] Ingold, Tim. "Materials against materiality." Archaeological Dialogues 14, no. 01 (2007).
A *medium*, like air, is the ethereal matter that enables movement and perception; a *substance*, like wood, is the physical thing, opaque and dense. Between these two poles is *surface* – the component that defines pattern, texture, shape and generally all perceivable qualities about a material.
[2] Dourish, Paul. *The stuff of bits: an Essay on the materialities of information.* Cambridge, MA: MIT Press, 2017.
[3] May, John. "Everything Is Already an Image." Log, no. 40 (2017): 9-26.
[4] Burnham, Jack. "Systems Esthetics." Artforum, September 1968.
“Scientists and technicians are not converted into ‘artists,’ rather the artist becomes a symptom of the schism between art and technics.” Fifty years later, the hybrid-material reveals that their former split concluded as a union between art and technics. The resulting environment has been converted into a landscape of digitally imbued information.

On the Data Blasé, Statistical Imaginaries, and the Cashier-less Bodega

Mark Shepard, University at Buffalo, SUNY

Between the breathless claims of proponents of “smarter cities” and the rousing critiques of “radical devices” lies the banal cloudscape of everyday data. This cloudscape is neither the highly optimized, ever-more efficient and sustainable city we’ve been promised, nor the spectacularly dark and sinister surveillance state of the post-Snowden era we’ve been warned about. This cloudscape is as broadly pervasive as it is largely invisible, although it tends to render as beige across our collective consciousness. It stretches seamlessly across public and private domains, between home and office, and throughout both online and offline environments. One can argue that we have become indifferent to the overwhelming volume of data we produce and consume on a daily basis. This cognitive condition can be construed as the “data blasé”, characteristic of a contemporary urban subject distributed across a probabilistic landscape composed of data points registered in discrete time series. With the introduction of Amazon Go–a cashier-less urban mini market based on the same fundamental advances in artificial intelligence, computer vision, and automated decision-making behind driverless automobiles–we find our offline shopping behaviors and purchasing habits being harvested into marketable data bodies. These statistical imaginaries are forming the training sets for an emerging class of urban retail. If the data center is the architectural emblem of early 21st century culture writ large, the cashier-less bodega portends to be its scalar counterpart.

Design-Build: Pedagogy, Practice, Production

Thursday, March 28, 2019
4:00 PM-5:30 PM
Westmoreland

Moderators: Thomas Gardner, Maryland Institute College of Art
Desmond Delanty, China Academy of Art

Acupuncture Urbanism

Stefan Gruber, Carnegie Mellon University
In times of accelerated urban transformations and limited predictability, top-down design instruments like the masterplan have become ineffective in tackling contemporary urban conditions. By contrast, this studio engages urban milieus inductively: analyzing prevailing ecologies, inscribed cultural codes and the socio-political forces at play in order to seek neuralgic points of design intervention that act as catalysts in the transformation of neighborhoods. Beyond designing buildings, the studio expands architecture students' repertoire to designing situations and events that promise to bring people together. Rather than obsessing over a final product, here design is explored as a tactical and performative tool for encouraging community engagement and supporting residents' collective right to the city.

In Spring 2018, the Collaboratory Studio at Carnegie Mellon's School of Architecture explored temporary interventions for addressing the vacant land of the Manchester neighborhood on Pittsburgh's Northside. Collaborating with the Manchester Academic Charter School, the studio studied how to open up the school to the neighborhood, and begin transforming surrounding vacant lots into a playscape and community meeting place. Weekly participatory design workshops with students from the middle school led to an overall strategy for reorganizing the parking, drop-off and pick-up situations, as well as a long-term vision for transforming vacant lots and buildings. Thus the studio was as much about designing a community engagement process as it was about realizing a full-scale micro-public space.

Meanwhile, our engagement sessions brought about an urge to render the planning and projection process tangible through immediate action. Together we built three "Roaming Porches" that serve as outdoor classrooms in the school's vicinity. During the youth workshops, the porches of existing houses in the neighborhood emerged as key elements: On the one hand, we learned that the distinct architectural features played a vital role in the rediscovery and subsequent revitalization of the neighborhood. On the other hand, we heard that they are important social spaces. By playing with familiar elements, while configuring them into something entirely new, the Roaming Porches feel contextual and yet trigger curiosity.

Rather than conceiving of the design-build projects as final products, the studio framed the porches as stepping stones for community engagement and possible alternative futures in an ongoing transformation process. Our work with MACS was accompanied by the non-profit organization Grounded, which then took over our urban design framework and used the porches throughout the summer for further community engagement sessions and events. A partial implementation of the playscape with volunteers from the neighborhood and school is currently planned in the summer of 2019.

Overall, the studio offers an opportunity to see a very small project through from conception to realization within only 15 weeks, and combine abstract systemic thinking with very concrete and hands-on action, in short, to think globally and act locally. Likewise, the studio encourages boldness in terms of the changes students aspire to, especially when confronted with problems such as urban blight, yet humility and pragmatism in the implementation of their visions, especially when bearing the responsibility of working with a community.

Pisces

Thomas Deal, Louisiana Tech University
Robert Brooks, Louisiana Tech University

For genuinely passionate students, a project deadline and the final review can be both a rich celebration of their work, as well as a bit of an abrupt ending to hundreds of hours of effort. By contrast, a studio that provides students with their first opportunity to have their work deemed worthy of the incredible capital investment of permanent construction can be an unforgettable ongoing reward. Imagine that experience in a situation where the design team also has full control over the construction process with no general contractor to compromise the translation from design to reality. To have that opportunity made possible by a client that is fast and firm in their decisions, generous with their trust, funding and appreciation for your efforts and whose who's mission is deeply motivational to your team can place that project among the very best experiences of one's career.

We are fortunate to enjoy just such an alignment of relationships, resources and responsibilities as our own design build program's operational model at Louisiana Tech University's School of Design. Each spring our students collaborate to work with Med Camps of Louisiana, a non-profit organization that provides free residential summer camp experiences for children with chronic illnesses and disabilities. The camp is a transformative place for both its end users, where, for one week a year they are no longer the marginalized minority, as well as the design-build students, who see their first built work come to fruition in service of the mission of empowerment for those less fortunate than themselves.

This 340' bridge across the lake at the center of the camp property was the centerpiece of a 2015 Masterplan that focused on future growth for the camp, creating a continuous circuit of activities around and across the lake. The project's focus was to improve circulation and better accommodate the activity of fishing for the campers.

The design and research process, which included quality time fishing with children and their families who attend the camp programs, led the team towards a conceptual framework centered around Pisces, the mythological symbol of two fish connected by a chord. The fish use their chord to solve problems, help others, and to ensure they don't lose one another. Similarly, this bridge serves to connect the two sides of the camp and forever link the designers to the campers the project serves.

The floating structure incorporates hundreds of reclaimed barrels and discarded steel from local oil and gas operations. It shortens the journey between camp activities, creates opportunities for fishing and even allows canoes to pass via a pivoting segment of the bridge. The camper's fishing experience is significantly improved by several detail elements including rod holders, lowered guard rail sections, gated fishing jetties, and two large shade structures that mimic the form of two fish leaping out of the water over the bridge.

A short film documenting the project can be viewed here: https://vimeo.com/223743555

Plywood Toys

Mo Zell, University of Wisconsin-Milwaukee
Marc Roehrle, University of Wisconsin-Milwaukee

Framework In 1967 Yale dean Charles Moore in collaboration with Kent Bloomer established one of the first permanent design/build studios in the country, the Yale First-year Building Project. Yale required ALL first-year graduate students to participate in the design and construction of a structure. “Moore saw that getting out of the studio and building something (making) would have several benefits for the students. As a believer in simple tectonics and basic technologies, he hoped students would be inspired by the mechanics of building.” (Vlock Building Project summary).

The importance of engaging ALL students in the making process cannot be overemphasized. In its theoretical form, an idea can only be challenged conceptually. Once an idea is given physicality, however, these artifacts (the drawings, models, etc.) can now be used to challenge the idea not only conceptually, but also physically. 1:1 exercises reinforce the notion that how we make things and how we think about them are intrinsically linked.

Architectural Toy While traditionally design/build exercises have been implemented at the scale of a space or a building, this exercise, at the scale of an object (and executed by an entire class of junior level students), delves deep into issues of intimate user interaction and tectonics. Students developed a project from conception to fabrication and finished with a better understand of the relationship between ideas and making. The students were asked to design, in teams of two, a transformable toy for a child while using a limited vocabulary of shapes and a single material palette of 5/8” Baltic birch plywood. The deliverables were not models, but the actual toy.

A local museum provided funds for the Baltic ply, allowing students to experiment without the concern of costs. In addition, the museum also displayed the best toy designs alongside an exhibition called Serious Play that highlighted the work of Ann Tyng. This provided students a venue to disseminate their ideas to the public. Children from the local daycare served as toy testers providing dynamic feedback to the student designers.

The partnerships along with the design and construction process allowed students to consider spatial and material experiences through tectonics in combination with how users interact with objects in their environment; and how designs benefit from careful consideration and inclusion of specific human experiences. The scale of the toy allowed for this assignment to be completed within a controlled timeframe and served as a primer for a satellite center for the local art museum.

This exercise also reinforced a critical discussion regarding means of fabrication. The laser cutter and CNC mill have been indiscriminately introduced into our design studios. The project offered a way to critically evaluate the roles of these tools relative to design. Students began to recognize that different tools leave different marks on the same piece of material. How can one capitalize on the positive aspects and minimize the negative ones? Realizing these relationships can only be understood as one actively engages with the process of making.

1000X

Christopher Meyer, University of Miami

'When the head and the hand are separate, it is the head that suffers.'
Richard Sennett (Professor of Sociology)

The discipline of architecture, if nothing else, is guilty of allowing the creation of idea to decouple from the construction of the idea. A commitment to the construction of ideas is the physical manifestation of thought through the assembly of parts into a whole; a melding of the hand and mind. As quoted by philosopher Giambattista Vico, "Verum Ipsum Factum - truth lies in achievement."– within the discipline of architecture, to think and then to make, is to answer to truth. Contrary to the solitary act of thinking, within the act of making, ideas must negotiate the rigor and severity of place. The culmination of architectural thinking is, and should always be an entanglement with environment. The core of design-build pedagogy aims to reconcile an idea from the perspective of materiality and place–it is the negotiation of physical forces: the pull of gravity, material characteristics, the dissipation of energy, and the relentlessness of time.
The 2018 summer fabrication program in Boston, Massachusetts brought together high school aged participants from around the world to engage in the fundamental principles of architecture under the pretext of thinking through making. The program culminated in a built project, 1000X, as a means to introduce the, 'affirmation of the real' to architecture students through the act of making. The brevity of the design-build pedagogy–working with a four week curriculum–requires a clarity in learning objectives and a preciseness in teaching design techniques. As a result, there was an imposed limitation of the material palette to a single modular material: the standard dimensional lumber SPF-2x4. In addition, the participants were introduced to three design techniques to explore and develop individual design proposals: opacity, translucency, and transparency. The participants spent week one observing Boston's urban fabric to sketch examples of the three design techniques, while week two introduced digital modeling platforms and the individual fabrication of hand held objects– operating between digital and analogue methods. The final two weeks were production; one group fabricated pieces off-site while the other assembled the pre-fabricated components on-site.

The project 1000X embraces a mass based system leveraging the dense network of members to create a dynamic relationship with light and visual connectivity between the interiority and exteriority. The heavy, mass based system stands as a critique on the contemporary use of dimensional wood members to create increasingly thin frames (walls) masked by ubiquitous sheet good materials with high embodied energies. The standard off-the-shelf SPF dimensional lumber stacked assembly is connected with 2 ½” compressed beech wooden nails. The project was assembled without the use of metal fasteners, rods or brackets with a footprint of 10’-0” in width, 25’-0” in length and 10’-0” in height. The introduction of non-traditional building methods implemented under the ospis of embodied energy and material geographies offers the aspiring architecture students new methods to address the increasing disparity between built artifacts and environment.

Design-Build: A Real-World Experimental Pedagogy for Architectural Education

Hongxi Yin, Washington University in St. Louis
Baoyue Wang, Washington University in St. Louis
Jian Zhu, Washington University in St. Louis

In 2016, Team WashU was awarded a $50,000 teaching grant from the Prestress/Precast Concrete Institute (PCI) and a $300,000 start-up grant from the Office of Chancellor Mark S. Wrighton of Washington University in St. Louis to develop a two-year design studio and seminar courses based on the U.S. Solar Decathlon student competition. The Solar Decathlon series of architectural design studios were part of an academic program closely collaborated with building industry sponsors. This program created new learning networks that combine education and research activities into a holistic, valuable hands-on student design experience. More than 100 WashU architectural students were involved at different stages, including the collaborative design and building process of a solar decathlon house. The project provided our students' unique opportunities for explorations of high-performance precast concrete designs at an advanced level of creative inquiry, design integration, and technical resolution through a systematic approach. In Fall 2017 we delivered one of the most visually appealing, affordable, comfortable, sustainable, and energy-efficient homes for the Solar Decathlon competition. This project was an excellent demonstration of how prefabricated, self-sufficient, and resilient houses can mitigate climate change. The Solar Decathlon house of Team WashU, the Crete House, was awarded the second place in architectural design in the 2017 U.S. Solar Decathlon competition.

Six Projects on Accessory Dwelling

Andrew Colopy, Rice University
Danny Samuels, Rice University

Six Projects on Accessory Dwelling is a recently concluded exhibition for a public audience that presented the work and research of an academic design-build program on the topic of accessory dwellings. The exhibit featured a recently completed accessory dwelling, +House, designed and constructed by students over the course of four semesters and a concluding summer. The show also included speculative design proposals completed in partnership with a local non-profit art institution and a series of material investigations and large-scale prototypes completed over the course of a comprehensive design studio and subsequent seminar entitled *Secondary* and *Paratype*, respectively. The design and construction of the exhibition too was completed as part of the program, and catalogs an increasingly important aspect of design-build pedagogy: connecting with a wider audience.

Given the anticipated audience, the exhibition aimed to be accessible to the general public while offering sufficient depth to be of interest to knowledgeable members of the profession. Here, the skills and work of design-build programs perfectly align with such aims, offering tangible and engaging means to connect large-scale constructions to more abstract modes of representation.

Given the topic, the design of the exhibit first sought to give the visitor a true feel for the scale of the modest +House, a 360 square foot accessory dwelling built for counselors at a local non-profit youth outreach program. Within the space of a hosting art center, the four exterior walls of the +House were reconstructed at one-to-one scale from lightweight metal studs and laterally braced by partial OSB sheathing. On the entry-facing outer wall, an 8'x8' map of the metropolitan area identified all viable accessory dwelling sites—in excess of 1 million. Inside, the full-scale plan of the +House was taped out on the floor and the wall opposite of the map provided plans, sections and construction photos of the project, recently completed.

The interior of the three remaining walls served to frame the urban context and neighborhood design response for each of five projects from the *Secondary* design studio. The aim was to bring the accessory dwelling into the public sphere with qualities that balance a distinct visual presence against a sympathetic urban character, and with forms that encourage a community of interactions among a network of dwellings. Through a small hole in the wall, visitors could look through to models on the opposing side and get some sense of what it might be like to have an ADU in their own backyard. On the exterior of the walls, these models were set alongside plans, sections, detailed models and walls sections to further illustrate the design and the construction logic of each proposal.

Two of the five projects later served to test alternative, non-standard construction logics in a seminar setting using adaptable digital models, or *paratypes*, to automate analysis and fabrication. Large scale tests of these proposed building systems along with animations were paired alongside their original design in the spaces resulting from the rotation of the gallery walls.

Midwives Quarters, Have, Volta Region, Ghana

Daniel Baerlecken, Georgia Institute of Technology
Katherine Wright, Georgia Institute of Technology
Judith Reitz, DESIGNDEVELOPBUILD

The project Midwifes Quarters Have is part of a program that provides a real-world design and construction experience to create socially and economically viable environments and to explore innovative material applications.

Student teams embarked collaboratively in the design and construction of a house for midwifes in Have, Ghana working with local volunteers and workers, structural engineers, climate engineers, and local NGOs.

As part of their academic curriculum, students from multiple international universities implemented their ideas in real life and moved from theory to practice. Students completed multiple stages of planning and implemen¬tation: From the first draft sketch to detailed planning, 1:1 mockups, imple¬mentation, cost and time controlling as well as construction itself.

During four construction phases, teams of approximately twenty students at a time worked with craftsmen, volunteers from the community and local technical students: prior to each construction phase student teams designed parts of the building and then implemented their designs as part of a summer study abroad program.

The project, located in eastern Ghana in the village of Havé Etoe, consists of four housing units with an interior courtyard similar to traditional compound settlements. The Midwives Quarters Have provide housing for midwives and international aid workers to enable their work at the Health Clinic in Have. In addition to housing, the project also provides space for medical training and for newborn workshops.

As a response to the extremely hot, tropical climate, the project is based on a series of separated layers of enclosure which are structuring the building into different zones with gradual transition from exterior to interior. Each layer offers its very specific structural, material, functional, phenomenological, tactile, and climatic qualities within a very compact design.

The first exterior zone is defined through a central courtyard in reference to the traditional compound house with multiple terraces and steps: it allows for activities such as cooking, eating, laundry washing and hanging, meetings, dancing, gardening, and more. The second layer is constituted by a bamboo roof providing a shaded, slightly elevated area for medical workshops. The third layer – formed by blocks and brick screens – provides privacy for each unit and serves as a protective barrier against insects and other animals.

Brick patterns, which are based on patterns found in Ghanaian Kente fabrics, give distinct character to each unit’s exterior and interior design.
Depending on the function of the each space, different patterns were selected for the

brickwork: At times purely decorative and at other times partly functional, where perforated masonry is used for ventilation.

During their time in Ghana students developed a strong awareness for the built environment in Ghana and the adequateness of their design ideas and applied construction methods, which sometimes lead to re-evaluated and change their design propositions during construction.

Climate, Environment, and Control: Challenging Narratives and Norms

Friday, March 29, 2019
10:30 AM-12:00 PM
Cambria East

Moderator: Margot Lystra, Cornell University
Erin Putalik, University of Pennsylvania

Museum for the Histories of Nature: Toward an Anamorphic Architecture

Ross Adams, Iowa State University

Is nature subject to its historicization? What could it mean to consider that ‘nature’ even has a history? How is architecture a crucial player in mediating and narrating changing perceptions of nature throughout history? What is at stake in posing such questions today in an age of climate change?

This paper presents a studio project that I have been developing and teaching for three years. It is an experiment to reconsider how architecture can intervene in a crucial moment in the changing discourse and increasing instrumentalization of ‘nature’ today. By conceptualizing an institute that explores ‘nature’ as a historically plastic and culturally produced category, and by establishing clear, critical positions toward this, the studio brief optimistically seeks to open up new understandings of nature as a historico-political category through which, in turn, to imagine new agendas for action in the struggles that climate change continues to present. As such, this studio radically deconstructs the ‘museum’ typology asking ow histories of nature can be told through competing and contested archives. If we are to invent new ways in which knowledge can be challenged and publicly debated, the nineteenth century version of a museum, where knowledge is presented as ‘curated truth’ to be passively consumed, will no longer suffice. Borrowing from political philosopher Jodi Dean, the studio sees an opportunity to idealize architecture as always already ‘anamorphic’ in its ability to frame otherwise totalizing problems, discourses and ideas like climate change ‘from the side’.

Listening to the Black Box: Failure in Post-Disaster House Design

Irene Brisson, University of Michigan

In this case study, I look closely at how dialogue failed in the context of a charitable non-governmental organization's (NGO) housing project in Leogane, Haiti that responded to the displacement of the 2010 earthquake. Using interviews, social media, reports, and observation of the social and physical environments, I reconstruct and analyze the processes of design and construction that led to a 300-house enclave, broadly considered to be a failure by professionals, residents, and neighbors alike. Misalignments in intentions and expectations emerged from dysfunctional communication. This bears significance not just to practitioners in post-disaster contexts but to the architectural core where dialogue and communication are under-treated in theory and pedagogy as critical components of architectural processes.

Urban Activist

Christopher Meyer, University of Miami
Shawna Meyer, University of Miami

Coupled to the development of agricultural settings within the Mississippi Delta are littoral urbanisms; these urban fabrics range from rural clusters to complex urbanisms fostering networks of industry, trade, and transportation. As the newly established agricultures and urbanisms matured in place; these human controlled environments began to show signs of opposition to the environment that conceived them. Natural river patterns of movement became antagonists to the static agricultural and urban environments. It was determined the continued existence of these urban fabrics are dependant upon the ability to control the pattern of floodwaters from the Mississippi River. A mindset of nature as antagonist was established.The expanding environmental control infrastructure altered the river system from a dynamic existence defined by the natural oscillation of the river bed and its associated shoreline into a static condition constricting the river's natural migratory pattern. The fixed edge, transformed a language of ebbing, flowing, meandering, eroding, and depositing to a vocabulary of levee, spillway, dikes, inlets, outlets, pump stations, canals and cuts. Settlements within the delta territory became increasingly dependent upon the ability of the constructed edge to prevent environmental fluctuations.

Historically, significant flood events tested to and past the breaking point of contemporary control infrastructures.. With each failure the systems would be rebuilt and reconfigured to be stronger, more robust, expanding their impact and search for rigidity. In contrast to a continual rebuilding, to accept a probably failure of control infrastructures is to accept disruption. Exploring the depiction of the disruptor through an urban and architectural lens one envisions the city in a fluid and dynamic condition; waters ebb in and out of urban fabrics and city boundaries and hard edges are absolved. A renewed ecology blends constructed environments with natural environments; architecture accepts place. The process to achieve this existence is through a planned deconstruction of the urban fabric. In this scenario, Morgan City is an urban activist, the city sacrifices the urban status quo of static and controlled environments through a planned reconfiguring of the urban fabric.

Designing for Denial: Private Property on Dauphin Island

Maggie Tsang, Harvard University
Isaac Stein, Harvard University

Rather than escalate the concept of “climate change” into a massive, intractable problem with a passionate cadre of worried supporters, this paper advances the concept that growing engagement and knowledge around environmental change should be made personal and political through site-specific protocols. Using the case study of Dauphin Island, Alabama; this paper examines latent spatial potential of private property along coastal landscapes that are facing sea level rise, increasing storm events, and shoreline erosion. On this barrier island, resilience is a term that applies more to real estate than to the island’s ecology; despite the visibly changing landscape, new development, investment, and reconstruction efforts continue at the water’s edge. Here, conflicts between property interests and shoreline dynamics generate a landscape of contradictions, but simultaneously open the door for alternative sites and strategies of engagement and activism. Ultimately, we argue that designers can forgo the uphill battle for legislative change, political realignment, and economic restructuring; and instead leverage physical space and the embedded spatial logics of development to reveal the shortcomings of the status quo and to encourage alternative attitudes towards land and the changing climate.

Draw(in)g to a (W)hole 1

Friday, March 29, 2019
10:30 AM-12:00 PM
Cambria West
Moderator: Nathan Hume, University of Pennsylvania

A Drawing Forged in Two and Three Dimensions

Carrie Norman, Tulane University

Several recent exhibitions and symposia on drawing indicate that drawing's role is up for debate within the discipline. This paper locates an emerging mode of architectural production that is finding slack within the stiffness of Robin Evans' directive that architects make drawings, not buildings. "Forging drawings" is an alternative drawing practice that privileges neither the abstraction of two-dimensional representation nor the physical specificity of three-dimensional built form. Rather, forged drawings reposition the boundary between two and three dimensions as a site of invention.

This paper situates a context for the practice of forging drawings through case studies from both within and outside the discipline. One case study project, A Drawing Forged in Two and Three Dimensions, is discussed in detail. The project, designed by the author, is an original work of architecture produced for the drawing exhibition, Arakawa and Madeline Gins: Eternal Gradient, held at the Arthur Ross Architecture Gallery, at Columbia University Graduate School of Architecture, Planning and Preservation, in the spring of 2018. Collectively, these examples signal a shift in drawing's limits within architectural production, create new opportunity for representation's role in architecture, and raise questions for how drawing is discussed, practiced, and taught.

Paradigms in the Poché

Michael Young, The Cooper Union

The identification of potential paradigmatic examples within the history of representation is a crucial responsibility for architectural pedagogy, as one of the primary manners in which new architects are disciplined into "the discipline" is through representation. To continue to preach specific mediations based on outmoded conventions betrays a conservatism ignorant to the continual development of culture. At the same time, to jettison representational traditions simply because of a new technology is naive and irresponsible. More to the point, it is misplaced to equate a paradigm with a convention. Conventions are apparatuses; conjunctions of tools, codes, techniques, methods of interpretation, technologies, styles, social hierarchies, economies of access, etc. Paradigms of representation use apparatuses, but what matters more is when these changes alter aesthetic and conceptual paradigms. As architectural representation moves more and more into digital mediation, it is tantamount that we understand that the digital is not the wholesale paradigm shift some have preached or feared. What seems more apt, is that some conventions remain steady, some are discarded, and still others enter into strange lands where we are only beginning to understand what may be a paradigmatic transformation.
For the purposes of a more focused discussion, the following essay will examine only

one concept within the history of architectural representation. It may have its origins in plan and section drawings, but as with all conventions, the apparatus undergoes transformations. The starting point, the initial paradigmatic example, will be provided by the parchment plan of St. Peter's produced by Donato Bramante in 1506.

Drawing a Panoramic Imaginary

Daniele Profeta, Syracuse University

Throughout history forms of representation have profoundly shaped the way we see and operate within the built environment. Today, Google Street View (GSV) can be understood as one of the most ubiquitous modes of orientation in our daily life, radically transforming the way in which we engage with the world around us. With this paper I will position GSV within a long lineage of immersive media, from panoramas to early cinematic images, to move past ideas of 'objective representation' and to highlight its potential as a site for design investigations. In order to foreground the relevance of these contemporary imaging technologies and immersive platforms of vision as instigators of a disciplinary conversation on representation, I will present some of my students' work alongside 'Arctic LiDAR', an immersive video installation I am currently developing. Here the tension between the aesthetic realms of human and machinic vision, the collapse of multiple territories in a composite digital model and the temporary displacement of viewers to remote and inaccessible sites, much like the infrastructure provided by GSV, become critical tools to shape contemporary subjectivities. Immersive drawing devices to move from the *known* to the *unknown*.

Black Box, White Cube: Exhibiting Architecture in Theory and Practice 1

Friday, March 29, 2019
10:30 AM-12:00 PM
Westmoreland

Moderators: Phillip Denny, Harvard University
Christina Shivers, Harvard University

Exhibition & Pedagogy Probing Architecture's Virtual Past in Museum Plaster Cast Collections

Joshua Bard, Carnegie Mellon University
Francesca Torello, Carnegie Mellon University

This paper describes two educational projects, conducted by the authors in partnership with the Carnegie Museum of Art, in order to illustrate the specific affordances museum exhibition provides in contemporary design practice. We discuss two collaborative and interconnected case studies from our recent work in the context of teaching and design research. The first, an advanced architecture studio, Low-Relief: The virtual and material cultures of architectural deceit, was an experimental course doubling as a museum exhibit. The second project, which ran parallel to the studio, was the development and use on the galleries of an augmented reality app: Plaster ReCast. The app was designed to facilitate access to the plaster cast collection of the Museum for museum visitors.

Both projects explore architecture's disciplinary history in relation to emerging Augmented Reality Technologies (AR), using plaster cast collections as a rich cultural site to probe architecture's proto-virtual past. These examples also serve as supporting evidence to reclaim AR and the virtual realm at large as a purview of the architect, arguing in favor of a considered application of emerging AR technologies in contemporary design. Ultimately the projects illustrate exhibition design's disciplinary relevance as a unique mechanism to critically engage architectural history with an eye toward future practice.

You Can Glue It. We Can Help.

Erin Besler, Princeton University

This paper presents a project recently exhibited at the 2017 Chicago Architecture Biennial, which uses the architecture exhibition as a platform to clear creative space for outcomes that rely less on architecture's expertise and mastery, and more on ubiquity and access. Those that are built on audience participation and spans of attention, and are the result of engaging various constituents in the production and exhibition of architecture, from historians to weekend warriors, construction workers to economists, YouTube stars to soccer moms, and social activists to social media influencers.

The-Post-Exhibit

Laida Aguirre, University of Michigan

This paper proposes to investigate the practical and critical dimensions of exhibiting temporary work in contemporary architectural platforms. Architectural exhibitions are in an existential crisis produced by the unaccounted economic dimensions of the production of this work. Unsupported by commercial representation and collector interest, most exhibition materials face an afterlife of storage. The sheer accumulation of production that these platforms create burdens the discipline with an air of overproduction. This paper is interested in foregrounding the roles of the meta-narratives and overarching frameworks for the architectural exhibition, exploring the possibilities of creating work that engages these more systemic issues and thinking through the critical value of alternative models such as exploring material return policies, an increase in programming/performance or a focus on digital output.

Exhibitions at Home: Finding a Domestic Urbanism in Three Shows

Jaffer Kolb, Parsons The New School for Design
Ivi Diamantopoulou, Sarah Lawrence College

The history of exhibiting art has a longstanding relationship with domestic space: from upscale salons to the apartment gallery, where one was accustomed to discern art between everyday objects, moldings and reliefs, in rooms of various sizes and lighting conditions. This relationship commingles the informal with the formal, the personal with the public, the intimate with the spectacular.

We'd like to discuss that intersection of art and domesticity, especially as it pertains to a hybrid condition that we have come across in our own work. Over the past two years we have designed three consecutive exhibitions for the Jewish Museum of New York. The museum is housed in a 1908 mansion designed by Cass Gilbert since 1944 and is currently part preserved (maintaining the distinct ornate features of each room-baptized-gallery) and part appropriated (to envelop white-box-like galleries). The home and the institution, in other words, are simultaneous: one the host and the other its guest.

Through these shows, we have worked to highlight the role of the mansion's architecture in the construction of the exhibition and vice versa; allowing us to discover the suppleness of the site through acts of internal reorganization that follow the logics of both architecture and urbanism. In Your Place or Mine, a survey on the work of Marc Camille Chaimowicz, we used the second floor galleries to connect a domestic enfilade to a picturesque walk that spoke to a stroll in the park, asking visitors to linger and turn. In Irrespective, a survey of Martha Rosler's career, we used the logic of New York's grid to create a counter-narrative to the order of the home; producing a condition where new galleries acted systematically against the gallery walls. Finally for Leonard Cohen: A Crack in Everything, we have designed a series of thickened thresholds to weave disparate parts of the museum into a unified whole--a form within a form.

These urban paradigms produce weird tensions between the structure's walls, the institutional visitors, and the works of art. Ultimately, the architecture of the exhibition comes into alliance (and conflict) with the architecture of the building itself. In that conflict that we might understand, author, or at least celebrate the independent ethos of the institution as it exists between its walls, and between a state of permanence and one of constant change.

Sea Creatures Make an Underwater Face; or An Alternative Disciplinary Coherence

Friday, March 29, 2019
10:30 AM-12:00 PM
Westmoreland
Moderator: Clark Thenhaus, California College of the Arts

“Having Just Broken the Water Pitcher”: Architecture, Fabrication and the Public Realm
Paul Holmquist, Louisiana State University
Is there an essentially architectural vocation and capacity implicit within the plethora of contemporary practices by which we can judge them, and account for their significance? If so, what constitutes this essentiality? How can we understand it, and how can we teach it? Through a discussion of the research undertaken in an architectural theory course taught over a number of years at several institutions, I argue that an *essentially architectural* dimension can be found in the relation between fabrication and the political nature of the public realm as it inheres in public space. Drawing upon Hannah Arendt’s notion of the public realm as the sphere of common concern that is actualized through acting and speaking, I propose that what is essential to architecture is the capacity to fabricate the concrete, experiential conditions for the actionability of the public realm. I will discuss the seminar framework and student research projects in order to show how this essentially architectural vocation can, in fact, be most clearly discerned in practices at the extreme edges of the field, and how furthering the plurality of practices is vital to architecture’s development and self-definition as a discipline.

A Desire to Invent New Mediums (A Hatred of Boredom)
Kyle Miller, Syracuse University
This paper posits that what unites us is also what divides us. To continue to invent, develop, and exemplify novel, innovative, and nuanced strategies for producing *Form*, *Space*, and *Order* is an ambition all experimentally minded architects share. Its what enables a narrative of continuous evolution within the discipline of architecture. But the continual reworking of new conceptual support structures for contemporary architecture that do not correspond to the dominant mediums established by previous generations and broader cultural contexts ensures the ruptures between generations of architects that this paper session seeks to mend. This paper tracks the emergence of new conceptual support structures in contemporary architecture and makes a case for continual transformation and divide as the condition that "affiliates individual projects with a possible whole."

Character and the Character
Andrew Holder, Harvard University
There’s character and there’s *the* character. Both are concerned with a retrospective view of architecture, where the glut of buildings and objects that comprise our physical environment are encountered long after the time and place of their production. Cut off from the reasoning that motivated each construction, and with no creator standing

helpfully at the ready to explain it all, the city is a “pile of debris” [i] that begs a theory to rationalize its absurd adjacencies. What hidden logic can explain the accumulation of chronologies, styles, techniques, and ideologies that are now present, simultaneously and unremittingly, in an endless, centerless field?

Character supplies this “hidden logic” by means of a table that accounts for appearance. It begins with a declaration of faith: every building is both unique and related to all others. Character is the visible evidence of this. It is the *visible mark of an individuality that belongs*: an ever-so-specific thing occupying a single cell in a vast table that has been neatly sorted to expose the similarities between adjacent cells. This table does not exist in a literal sense as a record of all things ever built (the best efforts of catalogists and specimen collectors notwithstanding), but the power of character depends on the belief that such a compendium is possible.

New! Post: Two Sets of Four Brick Buildings

Kevin Hirth, University of Colorado Denver

“New! Post: Two Sets of Four Brick Buildings” juxtaposes four works from the late modern period with aligned examples from the present to decipher the trajectory of architecture in our time. The position, built on an interpretation of four canonical buildings through their use of a single building material, exposes the expanding and fluid nature of tectonics in a building culture straining against norms. Both in the late 1960s and in the current period, there is an observable resistance to conformity with a pervasive disciplinary set of trends. The avant-garde of both periods as such use the details and materiality at their disposal to pose a critique of late-period culture. The juxtaposition poses Kahn, Venturi, Kallmann McKinnell Woods, and Alvar Aalto as protagonists in the evolution of high modernism into more diverse modes. By taking a close reading of each building’s use of brick, the critical content of the work comes forward. Through a similar lens, an examination of four new works in brick gives an indication of the complex associations and oppositions of a burgeoning generation. Standing in opposition to the individuated salesmanship and branding of established practice, each of the four examples from our present use materiality to represent a counterpoint. The work is not quite “post-modern”, but rather relentlessly combinatory and increasingly clever. Compared to the much clearer moment of searching evident in the late 1960s, today’s practice as seen through the lens of these four brick buildings is revealed to be an opportunistic, optimistic, absorption of past conflicting architectures with an eye towards a future yet-unfound collectivity.

Competitions 1

Friday, March 29, 2019
10:30 AM-12:00 PM
Westmoreland
Moderator: Ane Gonzalez Lara, Pratt Institute

Architectural Competitions. Architecture as Essay

Ines Martin Robles, University of Virginia
Luis Pancorbo, University of Virginia

This paper explores the concept of Essay and how it can be applied to the architectural competition.

The term “Essay” is addressed from a linguistics and philosophy in order to explore its nuances and its possible uses for architectural theory and design. The literary genre of the essay and its application to architectural competitions is studied through analogies with other terms as reflection, strategy, sketch, intent, draft, tentative, and rehearsal. For this purpose the text will be supported by previous work on the topic of thinkers as Gustavo Bueno, John Cage, Blaise Pascal, Italo Calvino, and George Steiner.

Architectural competitions, regarding this conceptual frame, are analyzed in their most stressing part for the designer: their beginning. This text considers competitions as strategical operations that are not restricted to a unique submission as a response to a determinate competition brief. We will consider that these strategic operations extend to the complete body of work of an architect, and that they conform a complete research field. The paper will work on top of the idea that each competition is part of a constant flow in which they are present, always modified, and sometimes veiled, findings learned in previous attempts. A competition submission, like an essay, must be open to interpretation and misreading in order to be fertile and successful.

(Re) Stitch Tampa Designing the Design Competition The Architectural Design Competition as a Research Platform and Pedagogical Tool

Shannon Bassett, Laurentian University

(Re) Stitch Tampa serves as a useful precedent that demonstrates the agency the design ideas competition can serve across many facets, including as a research platform, a pedagogical tool, as well as a platform for exploring new emerging methods and modes of architectural representation.

The brief was inspired from the proposed implementation of the initial high-speed rail line to be put in between Tampa and Orlando announced by the Obama Administration, earmarking 1.2 billion dollars of federal monies for its implementation. Due to partisan/Tea Party politics the project did not move forward.

The competition was initially premised as a critique of the failings of the post-war American City with the potential for architectural design to act as a catalyst for its recovery. It also called for resilient design strategies which addressed and responded to

Tampa's coastal location, including the re-articulation of its land-water edge condition. It began with a call for "innovative design ideas, which employed connective urban landscapes and ecological infrastructure as an underlying urban design framework and that this urban framework might act as a catalyst for the economic redevelopment for Tampa, while physically reconnecting a currently disparate and fragmented city and community."[1] It called for a critical re-thinking of the ebbs and flows of circulation and movement throughout the city, and how these might contribute to more sustainable development and ecological practices. Overarching to these themes was how this recalibration and choreography might better connect the city and its inhabitants to the River, a natural lifeline running through the city, not currently part of the city's experience.

The brief poses how this framework might begin to choreograph the flows and movements through the city to and from the River through urbanism and place making. An urban design masterplan, which was initially to be focussed around the expected high-speed rail station, was modified to the charge of re-thinking how the infrastructure might connect the city back to its River. Implicit in this was also the phenomenological experience of the city.[2]

Open-ended frameworks included conceptualizing possible spatial configurations which might occupy the rights of way along the River, which is to become the primary organizing spine for the city. Proposals appropriated interstitial spaces of the city found under highway infrastructure, in reclaimed vacant lots and in surface parking lots as well as foreclosed properties.

Ecological processes were integrated into the schemes, processes which included storm water mitigation, resiliency to sea level rise, as well as shoreline and habitat restoration. Schemes prompted a critical re-thinking of the current oppositional relationship of the city to its water, as well as the potential to re-stitch, re-cover and re-claim the landscape of the post-war coastal American city through ecologies.

[1] From the "(Re)Stitch Tampa brief as part of the competition call.
[2] Described by Juhani Pallasmaa in his chapter in the competition's ensuing publication, (Re) Stitch Tampa-Designing the Post-War Coastal American City through Ecologies, Edited by Shannon Bassett, published by ACTAR Publishers, New York, November 2016, 163p.

Competitions in a Networked Society: Crowdsourcing Collective Design Intelligence

Imdat As, University of Hartford

This paper discusses the reincarnation of the traditional competition model in online crowdsourcing platforms, thanks to an ever-more networked global marketplace. After giving a brief background on competitions, the paper will elaborate on crowdsourcing, discuss the dichotomy between competition and collaboration, and debate the potential impact of artificial intelligence on future competitions. The opportunity to harness collective design intelligence through collaborative features and modifications in the competition protocol suggests a new mode of competitive collaboration. The paper ends with a speculation on how such metamorphosis of traditional competitions can affect the role of the architect, and the future of the architectural practice.

Disciplinary Failures: Errors and Omissions as Alternative Trajectories

Friday, March 29, 2019
2:00 PM-3:30 PM
Cambria East
Moderator: Jacqueline Shaw, Rhode Island School of Design

Intolerance: Craft in the Age of Digital Perfection Embodied Histories of Craft

Edward R. Ford, Architect

Every work of art has an embodied history, the story of its construction. The mark of the paintbrush or the mark of the chisel leaves behind a history of the work and the craftsmen. These histories may or not be visible depending on the “craft” of the building. Recent discoveries in Neuro-aesthetics by Vittorio Gallese show that through the action of mirror neurons we react to the marks left by the paintbrush of Jackson Pollack or the chisel of Michelangelo in an empathetic way.These embedded histories represent an alternative way of understanding a work of art or architecture, one that was always there, that we reacted to but one we were not aware of, and their presence may challenge our conceptions about what good craftsmanship is. If craft is perfection these histories will be hidden. For them to be legible certain conditions must be present-the mark of the tool, imperfection in workmanship and incompleteness in form. It is easy to find these embedded histories in the architecture of the past the Arts and Crafts or in the recent modernism Kahn and Holl, but can this be of any significance in the digital age? An examination of some recent constructions in which robotics played a key role, but in which traditional craft played one as large, provide part of an answer. It is an idea much older than Gallese, going back to David Pye and ultimately John Ruskin.

Learning from Aviation. Learning from Architecture. Or Cockpits and Hospitals Psychologically Considered, from Arnheim to Barshi

Joy Knoblauch, University of Michigan

This paper begins with the deceptively simple question of what architecture can learn from aviation psychology and what aviation psychology can learn from architectural design. In the process, I hope to explore new ways for research to “articulate architecture's disciplinary core while contributing to its evolution.” The experience of flying a plane and the aviation industry's adaptation to that affective condition of sensory intensity, high emotional stakes, and also boredom / monitoring provide an example that is both similar and different from the artistic modes that have informed the last fifteen years of design's interest in gesture, empathy, and affect. Brian Massumi and others have looked to film and design pedagogy for lessons about the mutual interplay of emotional and intellectual processing. Historian Zeynep Çelik Alexander has posed a provocative question of what modern design might be or have been if the affective component were returned to it. John Harwood, Brandon Hookway, and many others have posed design as essentially the construction of interfaces that reduce the pain of the engagements of subject and machine that capitalism of the late 20th century seemed to require. My own previous work in the history of architecture and its engagement with psychology in institutional design leaves me unsure about the advantage of asking folks to talk about what they seek or how they perceive highly emotional environments such as hospitals. Instead, might design observe more directly the ways intensity and content interact and amplify, as Massumi has suggested? How can we learn from cockpits and hospitals to produce a more critical physical and mental ergonomics?

Urban Typography as Artifacts: Activating Collective Memory in Dhaka City

Muhammad Nafisur Rahman, University of Cincinnati

Urban streetscapes are theatrical constructs of urban memory, relationship, and activity. A street is not a production of just a physical definition of environments—but also the nuanced collective memories of the urbanites. Ubiquitous assemblage and diverse range of both contemporary and decaying wall arts, typographic experiments, political slogans on public wall, storefront displays, and other modes of legible attributes—all create an active identity and shared experience. In this paper, visual occupation of political wall art and graphic illustration of letterform in Dhaka, the capital in Bangladesh, will be evaluated through Rossi's 'locus solus'—a unique characteristic of a place.[1] Historic significance of socio-political expression within city walls since the historical language movement in 1952, multilayered signage system, reusing of same old facades while retaining the façades as street masks—as hybrid urban artifacts constituting totality to establish a 'sense of place' within its traditional urban streetscapes of Dhaka. According to Steven Heller, apart from traditional mediums, urban typography has been popularly used as a hybrid tool to influence the political ethos, visual narrative, and as an impactful vehicle of social voice in the urban milieu.[2] But they are also alive, evolving, negotiated and belong to the "collective memory" involving "agency, activity, and creativity".[3] Here, wall art is the act of gathering bits and pieces of the past, joining them together as the palpable messy activity which produces collective memory.[4] This distinct non-western viewpoint attempts to identify the notion of memory and image as vital contributors for urban identity and experience and will argue that the street be understood as a socio-political and experiential place associated with the core of a city's identity. The paper folds together broad theoretical discussion with historical account and contemporary readings of urban space. It also attempts to instigate the image of the city by probing around the following research question—How can words, type and letters in the built environment contribute to a city's 'collective memory'?

[1] Aldo Rossi. The Architecture of the City (Cambridge, MA: MIT Press, 1982), 33.
[2] Steven Heller and Mirko Ilic. Lettering Large. (New York: Monacelli Press, 2013). 7.
[3] Bina D'Costa. "War Crimes, Justice and the Politics of Memory", The Daily Star Newspaper. (Dhaka, Bangladesh), 1 April 2013. Quoting 'Jay Winter and Emmanuel Sivan'.
[4] Jay Winter and Emmanuel Sivan. Ed. "Setting the Framework", War and Remembrance in the Twentieth Century (Cambridge, Cambridge University Press, 1999).

Dissent and Racial Equity in the Work and Institutions of Architects

Shawhin Roudbari, University of Colorado Boulder

Architects have a rich history of mobilizing for activist causes in their *work* (e.g. opposing prison design) and their *institutions* (e.g. fighting for gender equity among licensed practitioners). But opportunities for participating in dissent in architecture are not equitably distributed. [topic] Radical activism around racial justice by architects faces challenges that other kinds of activism do not. This paper shares emerging insights from a study of contemporary activism by black architects in the US. [methodology] I conducted participant observation of activist events and unstructured interviews with dissenting architects. I situate the power struggles of architects organizing for racial justice within the larger landscape of activism in their profession with an analysis of the membership of radical activist organizations in architecture. My objective is to uncover entrenched institutional power structures that obstruct racial justice activism in the academy and the profession. [findings] The membership of radical activist organizations in architecture reflects a dearth of underprivileged and underrepresented minority members. Racial equity activism events and debates tend to focus on the *work* of architects rather that the *institutions* of their profession. Interviews with key dissenters of color foreground the complex identity politics that they negotiate in predominantly white work places and professional societies. [argument] I argue that radical activism for racial justice in architecture is concentrated in community advocacy not necessarily by choice, but in part because institutionalized forms of racism preclude the success of dissenters of color in their attempts to challenge the structures of their professions more fundamentally.

Draw(in)g to a (W)hole 2

Friday, March 29, 2019
2:00 PM-3:30 PM
Cambria West
Moderator: Nathan Hume, University of Pennsylvania

Marble ~ish

Maya Alam, Syracuse University

Let's begin by considering the suffix ~ ish as an architectural concept.

Amidst the chaos of the contemporary world, many architects seek the certainty of absolutes. Yet, everything about the contemporary world tells us that it is not governed by certitude. Instead, ours is a world where everything exists in a radical state of the 'in-between,' where nothing, not even architecture, has a fixed, certain, or absolute identity. In such a world, architects must adjust or risk becoming irrelevant.

As an adjectival form, ~ ish suggests identity (green ~ ish, American ~ ish), while at the same time mitigating precisely against identity.

~ ish is a subversive means of both supporting and undermining identity, of calling attention to a feature or characteristic of an identity that is precisely not that identity. Green ~ ish is not green.

"Ishness" simultaneously names and calls into question identity proper, and, in so doing, gives us a way to continue to make architecture in a world where the material certainties of wood, steel, glass and concrete have given way to the immaterial uncertainties of the mediated environments that we all inhabit. In architecture, ~ ish emboldens the roguish and disobedient among us who refuse the absolute and embrace the 'in-between.'

The images of the Marble Room are based on a LiDAR 3D scanner project from 2016. While this particular project aimed to create a digital, three-dimensional documentation, survey and archive of the School of Architecture, Marble~ ish focuses on the exhibition as site for visual activism and investigation.

Through a variety of digital operations the installation is transformed into an active landscape which questions the scanner's ability to accurately document — and thus produce — a definitive 'picturing' of the real.

As such, the installation allows us to speculate on the potential of many new depictions of the real all brought together in a single, mediated space.

Architectural Drawing and Physical Computing: From Points and Projections to Sensors and Data

Frank Melendez, City College of New York

Advances in computing and digital technologies have impacted and expanded the role of architectural representation through the use of design processes that are based in 3D modeling, parameters, algorithms, simulations, and immersive environments. Currently, computational tools, ubiquitous computing, open-source software, physical computing platforms, sensing technologies, programming, robotics, and immersive environments in Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), are providing architects with new opportunities for design, drawing, and representation. These modes of representation build upon the history of architectural drawing as a communicative medium, through the representation of three-dimensional forms as points, lines, and projections, offering new paradigms for creating and teaching drawing. In line with this year's ACSA theme, Black Box, and the session topic, Draw(in)g to a (W)hole, this paper presents three experimental drawing processes that implement input/output workflows using sensing technologies and physical computing platforms as methods for expanding the role of drawing as a design tool and a communicative medium by visualizing invisible, intangible, and temporal phenomena. These methods offer a research and pedagogical framework for using computational processes that bridge a gap between real and virtual environments, and open up opportunities for novel processes of experimental architectural design drawings.

Generative Design Computing

Erik Herrmann, The Ohio State University

Today, the computer often occupies a central, narrow space in architectural practice: central in that nearly every part of the architectural process has been digitized; yet narrow, as these simple automations (computerized) processes often fail to address the extraordinary disruption of digitalization our culture and (at stake in this research seminar) the discipline of architecture. In response, this research seminar aspires to utilize the computer not as a tool for simulating the world, but as a lens through which to view it.

The seminar concludes with an exhibition of open-topic projects exploring the biases and tendencies of digitalization in design and aesthetics, eschewing specialization and inviting software and programming into contemporary computational design's blind spots. In particular, students focus on the intersection of computation and representation, reconsidering through drawings and code the status of a number of disciplinary binaries including drawing/image, tectonic/scenographic, and information/content.

Disciplined Objects

Michael Jefferson, University of Michigan

The disciplinary norms of architectural representation can be considered a set of agreed upon tools for translating the world we inhabit into discrete, two-dimensional compositions that effectively re-present the world in architectural terms. In another sense, it is the means by which we domesticate the wild that surrounds us. Yet there are objects in the world (and beyond) that, by virtue of their clefts and cleavages, concavities, indecipherable profiles, or other ambivalent features, are left insufficiently described by traditional methods of projection. This class of object has received thorough attention within the academy in recent years and include, but are not limited to, disco balls, rocks, and lumps. If their usefulness within conventional architectural pursuits is limited to conventional techniques of description, how might they be doubled-down upon now as a catalyst for exploring contemporary strategies of drawing and its relation to convention? More to the point, can these unruly objects prompt an investigation of the intersection between the use(and misuse) of convention and the application of ubiquitous digital techniques?

The following projects result from a representation seminar that examined such a set of unwilling objects that resist formal definition (e.g. pigs, mountains, planetesimals, among others) through a host of representational strategies and processes in order to engage representation as an interpretive act. Rather than accept the inadequacy of convention in these cases, the course focused on developing strategies that called into question representational norms and mediums like plan, section, elevation, and oblique and applied them toward and against themselves. The seminar trained its attention on a group of objects that rather than being defined by clear graphic qualities that are easily recognizable by virtue of their strong profile or figural sections, were instead ambiguous, ambivalent, uncertain, inconclusive and irresolute, resistive, or in one word: undisciplined.

Students were asked to redefine these objects through the appropriation, repurposing, and deployment of representational tools and their analogous digital techniques, thereby inventing novel protocols that transition unruly objects into architectural spatial thinking. A curated selection of architectural works accompanied these objects as motivations for strategic interpretation. The final project asked students to employ strategies they had developed to produce unfamiliar translations of the familiar into architectural terms in the form of proto-architectural artifacts.

History & Precedent in the Design Process

Friday, March 29, 2019
2:00 PM-3:30 PM
Somerset
Moderator: Kai Gutschow, Carnegie Mellon University

Negating the Column of Trajan: Karl Friedrich Schinkel's Unorthodox Contribution to Precedent-Based Design

Steven Lauritano, University of Michigan

While the ongoing pedagogical role of precedent studies certainly demands scrutiny, this paper considers a long-dreaded scenario in professional practice: that moment when an undesirable precedent is "assigned" by the client. In an 1828 meeting with King Friedrich Wilhelm III, Karl Friedrich Schinkel faced precisely this predicament. The king demanded a set of plans for a new monument to Frederick the Great in the form of a "*trajanische Säule*." Fresh off a visit to the Column of Trajan himself, Schinkel had serious doubts about the legibility of this monument; not to mention the inevitable comparisons it would draw to the Colonne Vendôme of rival Paris. Yet rather than rejecting the king's request outright, Schinkel embarked on a frenzied campaign of creative precedent manipulation that resulted in a suite of six design variations. Each was carefully calibrated to loosen the king's attachment to the Trajanic precedent and redirect his attention toward more innovate possibilities. In the end the gambit failed and none of Schinkel's designs were built, but the process of working *against* a precedent seems to have spurred a methodological breakthrough. The burden of dissuasion unlocked a new freedom in Schinkel's compositional approach, marked by a willingness to distort the Trajanic original and transform its performative capacities. This paper closely examines Schinkel's series of operations which progressively encircled, flattened, multiplied and inverted the column, altering its legibility and its relation to the surrounding environment. Ultimately, this episode is used to return to the question of pedagogy: could a more confrontational, or even negational, model of precedent experimentation offer a more effective teaching tool in the studio environment today?

Reading Design Process: A Diagrammatic Approach to Teaching Architectural History

Gabriela Izar, UniCeub

Contemporaneous debates on architectural form has been linked to sustainability, parameterization and bioarchitecture. In this scenario, what would be the role of history? How the study of history would contribute to understanding the design process in its broad implications? Could the study of precedent open up new educational perspectives? This paper discusses the role of diagrammatic analysis in teaching architecture history and presents a didactic experience for architectural history students in the fifth semester of an architecture course at a private university in Brasília (Brazil). The particular experience of teaching undergraduates architecture history and design leads to a need to systematize the pedagogical research in order to establish where reflection in these two fields can converge. It is believed that teaching in two such independent fields – history and design – a practice not widespread in Brazilian architecture schools, involve specific methodologies and references. An alternative is to reconsider the premises on which the teaching of history and design are based, focusing on sharing emphases in both courses more effectively, making the students achieve theoretical speculation through the manipulation of formal relationships via diagrammatic procedures. Thus, the examples presented in the paper are intended to show that the teaching of the history of architecture can in some instances take on a kind of dynamic that is analogous to design work. Through this perspective, the role of the history teacher may have similarities with that of the architectural design teacher, in a context in which the teaching of the history of architecture becomes an exploratory construction laboratory.

Unpacking | A Study in the Generation of Louis Sullivan's Ornament

Nicholas Ault, Sodium Design

The ability for students to understand drawing as an analytical method and apply it in an exploratory and/or analytical manner is critical in their fundamental development and their understanding of Architecture. Difficulty arises because a clear implementation and articulation of this abstract idea as a technique is difficult, especially when dealing with a large group of students. The development of a curriculum that assists the students in understanding the investigative nature of drawings and the discipline of articulating drawings relies heavily on a systematic approach that values graphic relationships and rigorous logic. By utilizing Louis Sullivan’s quasi-algorithmic approach to generating ornament as the precedent and methodology the students are able to logically take apart a these constructs and understand the power of drawing both as an investigative tool , representational device and generative language.

Unearthing Concealed Histories as Alternative Design Methodologies: A Provocation in Favor of a Redefined Role for History and Precedent

Iván-Nicholas Cisneros, Princeton University

What happens when histories and precedents in the architecture canon are insufficient to respond to particular design problems of today? Could history and precedent study be re-evaluated to inform alternative design methodologies that speak to larger audiences, audiences historically marginalized or forgotten in architectural discourse? In this paper, history and precedent in the design process are analyzed to propose potential alternatives to their roles and particular deployable methods in the production of design strategies that may produce productive responses to urgent questions in the contemporary context.

Specifically, the paper explores potentials for hybridizing concealed social, political, and economic histories of sites with precedents to propose a changing role for history and the historically situated precedent in the design process. Rowe’s notion of history and its role in generating design innovation vis-à-vis Clarke’s notion of the precedent as an a-historical generic solution are considered in analyzing how social, political, and economic histories can be engaged as a vehicles for producing new ways of perceiving and shaping futures and super-futures of built environments. In doing this, the paper will utilize a complex contemporary problem: the vastness of the geopolitical order of things presently found in the US/Mexico borderlands as a testing ground for alternative methodologies concerning history and precedent in architectural design.

Baroque Rome as Algorithm: Coding History

Francesco Bedeschi, University of Arkansas Rome Center
Laura Terry, University of Arkansas
Winifred Newman, University of Arkansas

Using principles of design from the pre-modern architectural orders we challenged students to learn *algorithmic thinking* using Grasshopper™, a contemporary visual programming language. Addressing the relevance of historical theory in contemporary design was facilitated by digital software.Our approach extended to coding environmental and phenomenal processes at the scale of the city for a building program addressing the representation of ‘Smart City’ principles to Roman residents and visitors. Student teams devised programs for a *CityMark* or urban intervention focused on increasing public interest and awareness of the city as interconnected systems.

Search | Research | Repeat

Friday, March 29, 2019
2:00 PM-3:30 PM
Westmoreland

Moderators: George Dodds, University of Tennessee-Knoxville
Kathryn Holliday, University of Texas at Arlington

Dull Professional Data from Ordinary Precedents

Federico Garcia Lammers, South Dakota State University

This paper begins with an easily refuted assumption. Most formal architectural education culminates in two paths: the individual thesis project or the practice-based internship. The latter path is wrought with the practicalities of professional anticipation, while the former is bound by disciplinary expectations to articulate novel theories that often result in some instrumental application or goal. The work presented in this paper focuses on a graduate studio that addresses how to end architectural education by combining professional practice, precedent study, and speculative research. Since 2016, there have been twenty students, six professional practices, fifteen architects, and three faculty involved in the Forensics Studio at South Dakota State University.

The work from the studio is a forensic investigation into the decision-making and execution of an existing building. It operates like a detective story. Time simultaneously moves forward in the project time line and backward in the process of investigation. Where they meet is where motive is uncovered. In their last semester of study, teams of graduate students collaborate with one architecture firm to research the critical workflows of that practice. Practitioners facilitate the exchange of existing data, arrange site visits, and participate in studio reviews. Through the making of time-based images students explore professional networks by fetishizing ubiquitous and seemingly dull processes, such as, meeting minutes, field observations, specifications, emails, and more. There is a great deal of “non-architecture” work performed by architects and introduced to students in professional practice courses. Many faculty and professionals remark with frustration, “I worked on emails, RFIs, specs, etc. I didn’t design anything, I didn’t do architecture today”. What would happen if processes that are typically excluded from graphical representation had to be used to articulate the ideation and execution of a building? How can we unfold the complexity of ordinary architectural life in an academic context without trying to simulate architectural practice? What is the relevance of examining the theoretical underpinnings of dull professional processes, or “non-architecture work”?

The results from the Forensics Studio are a series of data-driven landscapes that articulate the decisions affecting the practice of architecture in South Dakota. In a technical age of expansive communication tools, these professional data landscapes highlight disciplinary questions at the intersection of architectural authority and collaboration. The studio is building a critical lens through which to end students' education. This lens hinges on the ability to theorize about professional work, instead of professionalizing theoretical work.

Searching for Denise: On “Deferred Judgment” After Fifty Years

Andreea Mihalache, Clemson University

Although recent scholarship has begun to acknowledge and give credit to Denise Scott Brown’s critical contribution to the Venturi – Scott Brown partnership, still little is known about her early career and their collaboration before becoming a team. An architectural and urban planning critic in her own right, she authored numerous articles and is credited with being at the origin of many of the ideas presented in the controversial *Learning from Las Vegas* (1972). One of the most intriguing propositions offered in this book is that of the “non-judgmental view” or the “deferred judgment” that should be required from an architect and urban planner as they proceed to the act of designing.

Scholarship on Venturi and Scott Brown tends to reduce this notion to the partnership’s questionable enthusiasm for the architecture of the Las Vegas Strip and, at a larger scale, that of commercial architecture, suburbia, and the non-architecture of signs and billboards. However, in Scott-Brown’s earlier work this idea took on a different meaning, full of a potential that, after half a century, appears refreshingly in tune with our current times.

I will make the argument that another aspect of this position manifested in Scott Brown’s work, is that of history as lived presence. To have a non-judgmental view is to bracket the idea that history is a finished past and to understand the present as part of a continuous and fluid trajectory. I will trace the beginnings of her architectural theory through two previously unexamined letters and suggest that the themes emerging therein constitute the seeds of her interest in and commitment to the idea of a non-judgmental view that she will advance in her more mature scholarship.

Almost five decades after the publication of *Learning from Las Vegas*, how can we have a non-judgmental view on our contemporary world confronted with issues that were barely foreseen in the middle decades of the twentieth century? How do we teach design and architectural history and theory in a devised and divisive world? “Deferred judgment:” what does it mean today?

Diversity and Equity Issues in Design: Course Creation as Impetus for Compassionate and Inclusive Design

Kiwana McClung University of Louisiana – Lafayette

Diversity and inclusion initiatives have been a part of national conversations among architecture organizations for quite some time now. With the AIA demonstrating their commitment to these issues through their various equity, diversity, and inclusions initiatives, NOMA’s[2] continuous avocation for the licensure of minorities and women, and numerous other organizations[4] publishing the demographics concerning individuals on the path to licensure, there is no shortage of professionals actively working towards improving the numbers. The issue is concurrently addressed through schools' curriculums, per NAAB’s[3] coverage of diversity and equity in school accreditation requirements, yet it is unclear whether these schools specifically address how architects may contribute or neglect these issues historically, intentionally or unintentionally. A new course was developed for architecture students addressing diversity and equity as a retrospective to inform future design decisions, with the ultimate goal of inclusivity and compassion. The course calls for the examination of the built environment through the lens of physical, social and economic access, public health, safety, and welfare, briefly touching on the architect's role in public policy and personal versus professional ethics. The goal of the course is to address historical and current spatial deficits, as well as highlighting current trends and statistics that may directly affect the profession. As another approach for advancing diversity, equity, and inclusion, the course closes the loop on the diversity initiatives of the profession.

[1] *The American Institute of Architects* has for many years been "actively engaged in furthering and supporting multiple initiatives and goals such as the Equity in Architecture Commission, K-12 strategies, Women Leadership and Multicultural Summits that value EDI for people of all backgrounds." https://www.aia.org/resources/24301-equity-diversity-and-inclusion
[2] *The National Organization of Minority Architects* employs the mission to "champion diversity within the design professions by promoting the excellence, community engagement, and professional development of its members." http://www.noma.net/article/45/organization/about
[3] T*he National Architectural Accreditation Board*'s Mission is the development and maintenance of "a system of accreditation in professional architecture education that is responsive to the needs of society and allows institutions with varying resources and circumstances to evolve according to their individual needs." https://www.naab.org/info/mission/
[4] *The National Council of Architectural Registration Boards* has, for many years, advocated protecting "public health, safety, and welfare by leading the regulation of the practice of architecture through the development and application of standards for licensure and credentialing of architects." The nonprofit organization, made up of the architectural licensing boards of 54 states and territories, annually provides statistical demographic information on licensure and licensure candidates. https://www.ncarb.org/about/ncarbs-role

Designing for People, not for Man: The Recurring Role of Social Science in Architectural Discourse and Practice

Julia Grinkrug, Academy of Arts University
Hans Sagan, Academy of Art University

This paper is focusing on the recurring role of social science in architectural discourse, education and practice, offering a review of how architectural theory cyclically sought out other ways of approaching issues of space, place, and being, transforming and strengthening the field. The paper suggests that perhaps we are entering the new outreach phase, wherein the discipline looks again beyond its boundaries to try and find useful ways of thinking and engaging with the real world.

Competitions 2

Friday, March 29, 2019
2:00 PM-3:30 PM
Westmoreland
Moderator: Ane Gonzalez Lara, Pratt Institute

City Thread

Molly Hunker, Syracuse University
Gregory Corso, Syracuse University

CITY THREAD is the winner of the Passageways 2.0 international design competition which asks architects to create a vibrant public space in an unused alley in downtown Chattanooga TN. The project is part of an initiative sponsor by River City Company, a local non-profit developer, to revitalize and catalyze the downtown innovation district. The project creates a space that builds upon the legacy of Chattanooga and the character of downtown by extending the attitude of adventure and exploration that the "Scenic City" is known for and bring a sense of discovery and stimulation to this unused downtown space. Given the immediate context of downtown - a growing community of innovators - the projects is a social connector where the different actors of the city can come together for both unique public programming and informal hangout. Situated in a city that privileges how infrastructure can enhance urban life, our project is intended to operate as a piece of artistic infrastructure rather than simply a work of art.

The project consists of a continuous linear volume constructed from a series of large, simple steel tubes to allow for generically specific space and formal gestures. By virtue of its geometry and formal manifestation, the project possesses many potential conditions including informal lounging/sitting, mini-stages, framing community murals or art, large gatherings, farmers markets, and movie screenings, among others. Further, the zig-zagging linear structure implies a variety of smaller spaces within the alley, breaking down the overall space into a series of more intimate spaces, or "urban rooms", which are reinforced by a system of painted graphic shapes onto the alley surfaces.

From a design standpoint, the competition format (open, multi-phase) and the jury of diverse stakeholders required that we consider our approach to design differently than other projects. We needed to present a project that had wide appeal, something that was specific and clear but also ambiguous, malleable, and accessible to the numerous parties involved (private, public, municipal). Given the nature of a simple formal vocabulary, the project is adaptable to a number of situations and was capable of being calibrated specifically to the site conditions (unknown at the time or proposal) and the stakeholder requirements in the design development phase.

From a studio trajectory standpoint, this was the third consecutive competition win (at the type/scale of pavilion) of our studio and the first opportunity to produce a permanent project. The project is the most recent manifestation of specific design-based research that has been explored entirely through these recent competitions and nurtured by not being beholden to a specific client input early on. The nature of this competition and the preceding ones inherently requires that the organizers role is that of an advocate (they chose it) rather than a reluctant collaborator, thus yielding a more compelling public project.

Architecture is Competition

Brian Strawn, University of Hawaii At Manoa
Karla Sierralta, University of Hawaii At Manoa

Architecture is competition.

Student competitions, professional competitions, open competitions, single stage, multi-stage, ideas competitions, international competitions, local contests, invited competitions, nominations, RFQ's, RFP's, peer-reviews, fellowships, awards, grants...we are always competing.

As competition entrants, advisers to students, jurors, and organizers, our small, two-person studio has been involved in over 40 architectural design competitions in the past fifteen years.

To us, competitions are a framework for architectural education, practice, and advocacy. We believe competitions:

Even the playing field Competitions are an opportunity to reach a broader audience, in anonymity, detached from name, gender, school prestige, nationality, personal brand, or architectural lineage.

Encourage critical narratives Competitions are a venue for research, speculation, and discovery. They allow us to question our reality, offer a way to explore beyond established boundaries and functional constraints. Competitions serve as a platform to envision the future.

Expose us to new problem fields Architecture can be hyper-specialized. Competitions permit exploration of new topic areas and typologies not confronted in daily practice.

Build new competencies Participating in competitions facilitates learning. They are safe places to test drive advanced software, practice new tools of representation, and gain exposure to industry best practices.

Accelerate thinking Short timeframes necessitate a charette approach, require a clear point of view, focus efforts toward big ideas, and hone time management skills. Competitions build tacit knowledge and design-muscle memory.

Empower architects Competitions are space for recovering our voice as

designers in a deconstructing, fragmented discipline and allow us to reclaim participation in the genesis of ideas.
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LiSC: Living in Shared Community

Mark Mueckenheim, Academy of Art University
Tsz Wei Leung, Academy of Art University

The inextricable link between housing and labor has not been taken up as a central tenet since Modernism. Though the failure of Modernism in terms of public space has been discussed extensively across both architecture and planning circles, the fact that housing was a pivotal concern to Modernism has been lost and yet to be fully resurrected in architecture. At a time when growing inequities are quantitatively proven and qualitatively assessed repeatedly, focusing on competitions that promote a new museum or a new reclaimed waterfront without also addressing the nature of housing and labor is a lost opportunity.

While it is true that the chances of winning an open competition are low, and that participating in an open competitions requires a fair amount of free labor, there are certain competitions that are worthy of our attention precisely because they are a venue for promoting changes and disruptions to normalized ideas of space, typology, and equity. The project here, LiSC, is a housing proposal that utilizes the concept of a shared economy to address the chronic housing challenges facing cities worldwide by promoting a socially, economically, and environmentally sustainable community in Hong Kong, where the housing crisis is especially and increasingly acute. In this context, with this project we argue that the point in entering competitions is to challenge a given typology, particularly as it relates to larger questions of equity, which in this case is the typology of housing.

The increase in efficiency allows for the presence of amenities that are usually associated with more luxurious apartment complexes, such as roof gardens, spas, sport facilities and food access, among many others. Rather than accepting the underutilization of living units throughout the city of Hong Kong, only what is necessary at any given moment of use is rented, immediately generating affordability for lower and middle-income urban populations. In addition to the clear economic benefits, this increase in efficient use generates social and cultural amenities through an increase in the communal activities that take place in the public spaces throughout the project.

Taking seriously the framework of a shared economy that we find ourselves in today, the open competition that asks us to reconsider the typology of housing offers this project the opportunity to disrupt universal ideas on what constitutes urban living in a way that reverberates across the social, economic, and environmental impacts of housing.

Before completing the project, it was entered into the Hong Kong Pixel Home Competition organized by an architecture competition organizer, which runs a high number of competitions that are open to students. Out of many submissions from all over the world, LiSC: Living in Shared Community won an Honorable Mention, one of 10 Prizes in total.

The Expanded School Centre for Special Education. Madrid, Spain Invited Competition. First Prize. 2016

Marcos Parga, Syracuse University

A mass media channel is a transmission medium, a system in which information travels between an emitter and a receiver. The main broadcast media are writing, radio, television and internet, and are the "places" where opinions are exchanged, critical thinking is built, previous knowledge is transmitted and visual and textual contents are distributed. Therefore, we can assert that, for better or worse, mass media are able to represent and reflect on the world in which we live and the people who inhabit it.
When designing our proposal for the new Centre for Special Education in Madrid, our intention, beyond creating a building, has been to build a new “channel”. A space for exchange designed to explore and promote new educational trends, to enable experimental pedagogical strategies development and generate a suitable and unique environment that reinforces intellectual and physical growth of disabled children and children with special educational needs.
As a result, our building will perform as a kind of test pattern, a fixed sign that was displayed when the transmitter was active but waiting to broadcast a new program. The new School will operate as a base frame of open configuration pending of programming. Our School will be a new media channel waiting to be loaded with content and capable of supporting subsequent updates.
Throughout this process the main variable that finally drove our work arose when incorporating the reality of an uncertain future as a raw material. In order to deal with the unexpected, we focused on a sort of neutral architecture, repeatable and standardized (modular), released from the tyranny of the present and based on concepts such as unstable identity or programmed imperfection. The final goal is to design a building to-be-done, whose real construction will begin the opening day.
The New School therefore will be an urban scale building but with a certain rural component related to domesticated natures, an antidote to monotony, to immobility, to "comfort zones", becoming a catalyst for non-conformist and proactive attitudes. We seek for an environment where nothing is as it is expected to be (or maybe...), where thinking and doing differently, where being a student, teacher or neighbor involves participating, and where the prevailing heterogeneity will be able to accommodate any teaching strategy. The idea is to avoid predictability, designing an space to project ourselves into the unexpected and the unfinished that the user must discover.
This strategy will allow us to deal with a large and complex program for 1700 all-age pupils including, among other functions, secure lobby, parents room,large hall, multipurpose space, dining room,kitchen and formative kitchen,classrooms, early years rooms, life skills room, hydrotherapy pool, gym,physio room, psychomotor education room, winter garden, sensory garden, cropping areas, outdoor playgrounds, and sports facilities, and parking areas.
The new building will be built combining concepts such as adaptability, creative participation, continuous updating, domestication of scale, typological decoding, constructive standardization, spatial and functional recycling, urban interaction and progressive specialization, to shape to a new typology of educational environment: the EXPANDED SCHOOL.

Decompose, Recompose

Saturday, March 30, 2019
9:00 AM-10:30 AM
Cambria East

Moderator: Max Kuo, Harvard University

Familiar Farmhouse

Dylan Krueger, California College of the Arts

Our pedagogical fundamentals celebrate *novel* buildings, a term synonymous with strange, exciting, weird, or radical. We have mastered the practice of producing such objects, but consequently, their surroundings are often underappreciated.

This proposal for a farmhouse, however shifts the emphasis away from the house and towards surroundings typically overlooked. It considers the adjacent clutter as an equal source of creative potential.

This farmhouse is set in California's Central Valley, where stacks of junk are tradition and a distinctive trait of the area. They are as readily familiar as the locale's cherished farmhouses. The accumulated clutter around the farmhouses is generally of utility use and organized by an individual's sensibility towards collection and composition. Emblematic surroundings to the farmhouse are shipping pallets, hay bundles, firewood, cedar mulch, to name a few of an endless list.

In this proposal, surrounding junk adds value to the house. There is more to look at, the saturation of which is personally enjoyable. It is gratifying to gaze at countless hay bundles, stacked two by two on top of each other, leaning against a house's board-and-batten siding. One of the hay bundles is propped up by the 18-inch on-center white picket fence that surrounds the stack, protecting it from livestock. At the base of the stack is a collection of handmade flower planters, ranging in diameter. An assemblage of collectable figurines is stuck between the two bowed plywood sheets pitched against the stack. Beside this pile is another pile, consisting of shipping pallets and is equally as exciting.

Junk is inherently interesting to our contemporary culture. In architectural studios, they are designated as ready-mades or found objects, things that have intrinsic symbolic value because of their cultural familiarity. Students kitbash, mix, mash, and blend these familiar objects together, producing something in-part recognizable, but overall unfamiliar. However, there is no need to reinvent them; they are fascinating as is. This farmhouse consciously negotiates with its given variables.

This proposal sincerely considers background as anything but, well, background. It is necessary to teach that there is always an opportunity to find value marred in convention, no matter how mundane the subject matter may be. This is not a personal plea to give up designing novel farmhouses, rather to understand the value of the things in front, besides, and behind it equally.

Unbuilding Walls - German Pavillon 2018 from Death Strip to Freespace

Christoph Korner, Woodbury University

For 28 years, Germany has been united - exactly as long as the Berlin Wall existed (1961–1989). On the occasion of this parallel, we were curating the exhibition “Unbuilding Walls”; at the German Pavilion at the 16th International Architecture Exhibition in Venice.

The exhibition responds to current debates on nations, protectionism and division. The German Pavilion takes the parallel as an opportunity to explore the effects of division and the process of healing as a dynamic spatial phenomenon. With reference to “Freespace,” the central theme of the Architecture Biennale, special focus will be given to outstanding examples of urban and architectural design that address aspects of division and integration.

The exhibition design welcomes the visitor with the view of an almost oppressive, black, monumental wall as the first view from the entrance. After the eyes adjust to the dimmed light in the pavilion, guests start to realize that it is not a solid wall, but rather a fragmented assemblage of wall segments, scattered through the space, but distorted in a way that makes it look like a solid wall, using anamorphic effects. Once you start to move through the space, or other people are moving around you, you realize that the wall is fragmented and can be permeated. The activity of the visitor starts to unbuild the wall. The back of the wall fragments, not unlike the still existing segments of the Berlin Wall, are colorful, contrasting the stark blackness of the front. They display projects built or planned along the former iron curtain. </p> <p>By analyzing architectural projects on the former border strip, the question of what happened on this unprecedented void in the middle of a new capital will be examined. The heterogeneity of the multitude of approaches, typologies, protagonists, and results show the breadth of architectural debates and solutions.

Taking the experience of the inner-German Wall as a starting point, the exhibition also examines historical as well as current barriers, fences and walls beyond Germany’s specific national perspective. In the course of the preparations for Unbuilding Walls a journalist team travelled to border walls around the world. This work is shown at the German Pavilion as well.

The Wall of Opinions video installation documents the voices of people who live in the shadow of walls in Cyprus, Northern Ireland, between Israel and Palestine, the USA and Mexico, North and South Korea and at the European external border in Ceuta.

Between the Lines

Michael Jefferson, University of Michigan
Suzanne Lettieri, Fashion Institute of Technology

Between the Lines reimagines salvaged trim and molding as a DIY project writ large. A familiar, domestic, and at times excessive material used to outline doors, windows, and walls acquires mass and playful contours that serve as both a subliminal reminder of its past and a renewed identity in its reorientation.

The project serves as a street garden for a street festival, situated as an intimate space fostered by the reapplication of domestic materials. In repurposing trim and molding, Between the Lines flips the orientation of the common material to reveal its profile edge. Layers of molding are compiled together to form impromptu extended edges that when milled and stacked compound to an articulated mass. The voids between stacked profiles are pronounced through the articulation of color, with the linear surfaces of the molding painted fluorescent pink to reinforce the objects' interiors. In doing so, the relationship between moldings' cut edge (its profile that is typically hidden) and its surface is flipped. The inversion of the material's qualities acts to conceal the its original identity, instead transformed from domestic aesthetic application to urban furniture.

The project was commissioned for the 6th Annual Sidewalk Festival in Detroit among a series of Installations and Performances relating to the theme SOURCE - FUTURE.

Another Digital

Erik Herrmann, The Ohio State University

Another Digital is an installation/database of design experiments generated during a year-long research fellowship. The collection of over 100 objects and images includes formal geometric studies, drawing experiments with historical sources and propositions for architecture at all scales, from villas to cities. Formal tropes and organizational structures recur throughout the collection. The repeating motifs of generative design produce affinities between discrete objects that vary in materiality and scale.

This installation is a growing body of research into alternative forms of the digital project, one that bears little resemblance to design work we have become accustomed to associating with the problematic label 'digital architecture.' This collection of work occupies and transgresses the spurious boundary that persists today between programming and broader design culture. The installation explores this new territory through a fragmentary and discursive form of computational design research. Specifically, this form of digital design invites the return of disciplinary concerns cast out in the recent wave of design digitalization, including typology, primitives, and architecture's conventions - both representational and constructive.

Material Frontiers 1

Saturday, March 30, 2019
9:00 AM-10:30 AM
Cambria West
Moderator: Gail Borden, University of Houston

Building the Resistance: Eladio Dieste's Digital Work in Cerámica Armada

Federico Garcia Lammers, South Dakota State University

Many archive photographs capture the construction of long-span reinforced masonry, double-curvature shell structures built by the practice of the late Uruguayan engineer Eladio Dieste. There are few photographs of Dieste hovering over models or drawings in his office. In most images, he is speaking with workers while inspecting and standing on formwork - construction materials always within his reach. Images show Dieste working with job captains dedicated to designing the complex choreography of materials and bodies on site. During the second half of the 20th century, his engineering and construction practice, Dieste and Montanez, invented four material innovations in Structural Ceramics or Cerámica Armada. Cerámica Armada combined the abundance of a local material, like clay brick, with the modern advent of steel reinforcement. Dieste's fascination with material was based in the structural resistance to gravity through the combination of material and form.

The virtuality of the digital in "Building the Resistance" is framed by the role of formwork systems designed to build Gaussian Vaults and other the double curvature geometries in Dieste's work. Studying the adjustable and reusable formwork systems designed and constructed by Dieste's practice highlights the implications of making digital work without computational technology or electronic media. Historical knowledge of these systems connects the invention of complex forms with the labor that produced them. Problematizing the representation and construction scope of labor is critical to the ideas of economy proposed by Dieste. In "Architecture and Construction", Dieste suggested that Cosmic Economy was a way to reveal the order of the world by paying close attention to the people behind the construction of buildings (Dieste, 1992).

During a 1990 interview with the architect Mariano Arana, Dieste stated that he rarely made models in his practice, "the model is slower and more expensive than computation – the smaller structures have been the models for the larger ones" (Dieste, 1992). In this passage, he was referring to the slowness of physical models and the speed of numerical calculations as a form of computation. Dieste's work challenged the geometrically planar hegemony of modernism by developing a repertoire of digitally produced forms. The process was digital because bits were used to anticipate and calculate the behavior of atoms - data predicted the behavior of physical matter (Negroponte, 1995). His practice trafficked in data before the ubiquity of computer servers displaced the understanding of physical matter as the product of intimate numerical knowledge. Many engineers, artists, and architects, like Antoni Gaudi, worked through digital means to find forms long before computational tools. Unlike other people investigating the relationship between materiality and virtuality, Dieste did not use any form-finding techniques other than the use of numerical calculations to anticipate material bending and load distribution.

With a sense of Cosmic Economy in mind, how does examining formwork labor become a digital precondition for understanding the material effects of Cerámica Armada? Material lessons from Dieste's work highlight ways to resist gravity as well as the economic and political forces that shape the contemporary relationship between architecture and labor.

Robotic Needle Felting

Tsz Ng, University of Michigan
Wes McGee, University of Michigan
Asa Peller, University of Michigan

Robotic Needle Felting explores the development of an additive manufacturing technique for nonwoven textiles. Nonwoven textiles, such as felt, can be natural materials (wool), synthetic polymers (polyester), or blends of the two. These textiles have numerous performative aspects for architectural applications including excellent acoustic absorption, thermal insulation, and tactile characteristics. The nonwoven textiles can be manipulated by a process called needle felting - whereby barbed needles, when punching through layers of material, entangle the fibers together making it a uniform material. This process binds the material together seamlessly without the addition of sewn thread or toxic adhesives, making this technique a more environmentally friendly process.

Needle felting can range in scale from handcraft techniques with a single needle to large scale web processing. Integration into a robotic process not only enables precision and speed in manufacturing but also extends needle felting as a three-dimensional process, especially for surfaces with complex geometries and allowing for local differentiation of stiffness and other properties across a homogenous solid. Through a customized digital workflow, formal and material properties can be varied at local level within a component. By developing a fully integrated design to production methodology for influencing these properties, this research opens a wide range of potentials for nonwoven textiles in architectural applications.

The project involves three areas of development; the tooling for robotic felting, the digital workflow that enables the formal and material properties to be specified computationally and embedded into the machine code, and prototypes of architectural elements such as acoustic panels and furniture demonstrating different techniques and processes. Additive manufacturing (AM), commonly known as 3D printing, has revolutionized the design to production workflow in a wide range of disciplines. While AM processes have been developed for a wide range of materials, from ceramics to plastics to metals, there have been very few investigations into their applications for textiles. Given the unique capacity of felt to be seamlessly "added" into a cohesive solid, it presents a unique opportunity to investigate the potentials of an AM approach with nonwoven textile as composite material. In some cases, a nonwoven thermoplastic textile was used together with other natural felt materials to both create varied ribbed textures and to enhance overall stiffness by heat setting after felting.

The prototypes explored four techniques resulting in different surface textures and form: quilting, shiplap, shingle, and thermo-activated composite. For these techniques, different layers of material could be felted together or onto a foam substrate as an integrated process. Additionally, an automatic tape feed facilitated both shiplap and shingle techniques with unique patterns and varying overlap. Through the research, design, and fabrication of acoustic panels and furniture using the techniques developed, the computational design process negotiates the precision and nuances of robotic felting with the specific material behaviors of nonwoven textiles. Geometric limitations are also incorporated, which respond to the tool's movement and the types of material being felted.

Image Matters

Cyrus Penarroyo, University of Michigan
McLain Clutter, University of Michigan

Images are everywhere in contemporary culture: illuminated through pixel, stored in silicon, and still ever-present in a range of photographic formats. Typically conceived as representations of external content, the amount of physical and virtual space images occupy demands that they be understood as objects in their own right. If images are a ubiquitous part of our material world, what is the status of the materiality of images? Image Matters explores this question through a design and making-based project consisting of two parts. The first is an occupiable sliding-box camera named the Conditions Room, a study of the spatial and material consequences of image-making. Clad in neoprene foam, particular attention was paid to the paneling details, which elevate the light and thermal requirements for image making to the level of architectural expression. Aluminum reproductions of these details are the substrates for the second part of this project, prototypes for an image-embedded wall panel system. These pieces have been photo-sensitized through the use of wet-plate collodion photographic processing, an archaic procedure entailing chemical and physical reactions that produce a direct-positive photographic image. Wet-plate prints have a texture and depth granting heightened material presence, vastly exceeding that of the typical snapshot or digital pic. The prints evince familiar photographic effects while refusing to cede their object-quality to the realm of mere appearances. Once sensitized through the wet-plate process, our panels are exposed within the Conditions Room, capturing the image of digitally manipulated material textures that we have designed and staged afront the Condition Room's aperture. The resulting prints appear strangely familiar. They are unmistakably photographic and yet sufficiently distinct from most images to interrupt habitual consumption, confusing the flat and the thick, the digital and archaic, all in order to disrupt or slow-down image circulation to secure moments of rare attention.

Designing Matter An Introduction to Architectural Design For First Year Graduate Students

Roger Hubeli, Syracuse University
Britt Eversole, Syracuse University

Animals, vegetables, minerals and pixels partake of the world of architecture. The architect’s imaginary includes the simplest found substances—copper, aluminum, wood, water, air, light, bytes[1] , plastics, concrete, dirt and clay. Inspired by their physical, chemical, digital and biological possibilities, design could be understood as the aesthetic organization of animate matter into form and composition. [Celant, Arte Povera] The initial act of design is a comprehension and exhibition of a given substance’s behavior, from growth to decay, from chemical reaction to movement, deflection and failure.

A process of design that starts with matter “moves away from emphasizing the subject, representation, and interpretation, which characterized [the] 20th century [...] toward focusing instead on the object, material process and expression.” [Skylar Tibbits, Active Matter] Focusing on material experimentation provides insight in how designing through innovation - at the scale of matter - can make architecture a site of production “where theory - in the form of a contemplative observation - and experiment [are] inseparably interconnected.” [Moravánszky, Ákos, Metamorphism: material change in architecture] For theory and experimentation of a material to co-exist, design requires one to start at the level of matter that is not yet materialized.

Therefore, in order to innovate, one would question the status quo and design at the scale of matter that is not yet a materialized product. As Sheila Kennedy states in Material Presence, “It may seem counter-intuitive for a critical practice of material research to examine the material predicaments inherent in the culture of production as a source of inspiration. But it is precisely here that the greatest challenges to the imagination lie.”

With this the students set out their architectural career with a notion that architecture is an inherent part of the material environment that surrounds them. Providing the students with a notion that architectural design requires engaging the social and environmental conditions that are so pertinent for our built environment.

Computation in the Core: Critical Pedagogies

Saturday, March 30, 2019
9:00 AM-10:30 AM
Somerset

Moderators: Daniel Cardoso Llach, Carnegie Mellon University
Matthew Allen, University of Toronto

From Black Box to Generative System

Pedro Veloso, Carnegie Mellon University
Ramesh Krishnamurti, Carnegie Mellon University

Under the umbrella of the digital turn, novel computational workflows and distinct aesthetical principles are becoming an integral part of architectural education. Nonetheless, in current educational settings, there is not much scope for a deep understanding nor the development of custom computational design methods beyond standard toolkits. To fill this gap, we outline an educational framework for the development of new generative systems. The proposed framework combines canonical techniques for generative systems from different fields with recent advancements in Artificial Intelligence. It comprises eight schemas: unstructured constructive, structured constructive, variational, improvement, discrete simulation, continuous simulation, generative learning and behavioral learning. Each schema consists of a different formulation of design space and navigation, providing a knowledge base and a common language for design. Their adoption in design education can potentially expand the boundaries of design both within the agendas of the authorial design, nurtured in the studios, or even expand the boundaries of the profession to address future demands from society.

Computing (with) Architecture: Pedagogical Explorations at the Intersection of Design and Mechanical Computation

Dimitris Papanikolaou, University of North Carolina at Charlotte

In his book *Soft Architecture Machines*, Nicholas Negroponte considers three potentials for the computer in relation to Architecture: the computer as a designer, the computer as a partner, and the computer as a physical environment. The first potential, coming from design studies, inquires design as a process, asking the question “is designing computable?”. The second and third, coming from cybernetics systems theory, and human-machine interaction inquire design as an artifact and its relationship with a user, asking the question “is inhabiting computable?”

While the relationship between computing and designing has retained strong connections with design theories, the relationship between computing and inhabiting has not. Designing architectural typologies from shape grammar rules (Stiny and Gips 1972; Mitchell 1989) has been paralleled to the process of composing syntactically valid sentences from language grammar rules (Chomsky 1964), evolving into a procedural theory of designing. In contrast, designing intelligent environments has done little more than appending computing technology to architecture and assigning anthropomorphic behaviors to it as an afterthought, often without critical reasoning on how computing and

architecture may affect each other. Today, 40 years after the MIT Architecture Machine Group created the Media Room (Bolt 1980), we still point and talk to buildings, walls, and furniture as if they have mind, soul, and composure.

There are two reasons, I argue, for this. The first is that the medium with which information is manifested (electric voltage) and the speed with which it is processed by a computer are invisible and imperceptibly fast. As a consequence, the actual workings of computation are experientially unnoticeable and difficult to express architecturally. The second reason is that, when architecture students learn Interactive Computing, they are trained in high-level programming languages that further mask the machine code that drives the mechanics of computation. The invisibility of information and computation and the de-contextualization of software from hardware, miss the opportunity to use computation as a medium to drive design and architectural discourse, and mask the potential contribution that architecture can make in the field of computing.

I juxtapose the question “is designing computable?” with the question “is computing designable?”. If computation is the process of “storing, transmitting, and transforming information from one form to another” then designing computation must be the process of designing systems capable of using energy to transform their states, from input configurations and rule-driven constraints. Nothing other than inventiveness prevents design and creation of computing machines from such things as building components, human movement, and environmental forces.

This essay describes the development of a pedagogical approach in a project-based seminar and in a graduate-level design studio at institution Anonymous that aims to engage students in principles of mechanical computation and to develop critical thinking on how information and computation can be manifested and performed tectonically, through architecture. The two courses pose the question: What if the built environment could compute? Can we, and if so, how should we, design environments that compute? Selected student projects from both courses are presented and discussed.

Default Mode

Emmett Zeifman, Columbia University
Sara Constantino, Princeton University

Discourse on what is sometimes called the “postdigital” in architecture has been characterized by terms such as sampling and remixing, collage, indifference, and, recently, “greyboxing.” These terms suggest contingent or provisional blends of things that are characterized by their fragmentary, heterogeneous, and at times crude qualities. Importantly, they draw attention to the ways in which the aesthetics of contemporary architecture emerge from the specific tools and methods with which architects work, questioning the association of technical skill with architectural achievement, and explicitly or implicitly suggesting ways in which the computational mediation of architecture labor--the ease with which architectural form can be produced, iterated and represented--has begun to alter the values placed on architectural forms and representations of those forms themselves. If the “high” digital era of the early-1990s to mid-2000s was associated with a successive set of novel modeling tools--

formZ, Maya, Grasshopper, etc.--and the specific geometries they were capable of defining, as well as by increasingly sophisticated rendering and animation capabilities, today the production of architecture tends to occur through the use of commonplace softwares to produce work with formal or representational qualities that are not new to architecture. Many architects, and by extension their students, appear to have settled comfortably into workflows centered on a limited set of capabilities offered by tools now at least thirty years in development (AutoCAD, Rhino, Illustrator and Photoshop), and to use these tools to produce work that falls within the technical capacities of pre-digital architecture. The qualities of contemporary architecture are therefore largely shaped not by technical or geometric virtuosity, but by sensibilities with which prosaic tools are mixed and used.To begin to parse this “postdigital” field, which is often described as flattened or diffused, we have attempted to elaborate a series of common working methods and techniques that structure the current production of architecture. These not only organize certain contemporary interests, but also tie them into longer disciplinary lineages that suggest that the “postdigital” does not represent a decisive break from the “digital” or pre-“digital” against which it is generally measured. To engage the “postdigital” pedagogically requires historically situating its material and computational practices, and beginning to articulate the ways in which its recourse to casual, default or conventional techniques of producing architectural form and representation can, as its constituents advance into practice, be intentionally and collectively directed towards the production of buildings.

Everything is Software

Galo Canizares, The Ohio State University

The world has become so inundated with software platforms, operating systems, and interfaces that the materiality of computation (circuits, electrical impulses, etc) have faded back into an unconscious layer, or a “black box.” In architecture, projects rely on a wide assortment of software packages and standalone applications for design, development, and deployment, yet it’s not until recently that architects have begun to reflect on the structure of those programs and how they have infiltrated our disciplinary conventions. Through examples, this paper illustrates how some designers are finding ways to talk about software theory, and proposes new methods for critically engaging with facets of software rarely discussed in design practice and education, such as the politics/biases of interfaces and the material realities of computation.

Theory's Rise and Fall: Contexts and Conditions

Saturday, March 30, 2019
9:00 AM-10:30 AM
Westmoreland
Moderator: Joseph Bedford, Virginia Tech

Orientation at the Brink of Revolution? - O.M. Ungers and the passing moment of theory at TU Berlin

Ole Fischer, University of Utah

In December 1967 O.M. Ungers convened the first international conference on architectural theory at the department of architecture at the TU Berlin, which lasted an entire week and engaged 18 speakers: Friedrich Achleitner, Reyner Banham, Peter Blake, Lucius Burckhardt, Ulrich Conrads, André Corboz, Günther Feuerstein, Kenneth Frampton, Sigfried Giedion, Otto Graf, Antonio Hernandez, Jörn Janssen, Jürgen Joedicke, Julius Posener, Colin Rowe, Eduard F. Sekler, Sam Stevens, and Adolf Max Vogt.

This paper unfolds the institutional politics behind this conference, as much as characterizes the heated atmosphere on the evening before the student revolts. In addition, this presentation describes Ungers' aims and hopes for orientation and legitimization in a moment of crisis for both later modern architectural practice as well as pedagogy, but also contextualizes this conference within the history of similar projects at other schools of architecture. The event, despite being documented in Ungers' own publication series *Veröffentlichungen zur Architektur VzA* [*Publications on Architecture*] has been largely overlooked, since the conference did neither provide the orientation, nor bridge to the politicized student body, nor cause institutional changes (at least not in the way intended). And finally, it has not received its due since most historians of the rise (and fall) of architectural theory prefer to tell a different narration of 1968, other than the one of Ungers and the passing moment of theory.

"Six Concepts" and Disjunctive Empiricism: On Bernard Tschumi's Theoretico-Practical Promiscuity

Sophie Juneau, Independent Scholar

This paper proposes to focus on the notion of "disjunction" as it has been theorized by Bernard Tschumi. More specifically, it will try to show how Tschumi's inaugurating lecture at Columbia GSAPP, "Six Concepts" (1991), captures the notion of "disjunction" in a state of mutation and adaptation. The critical period in which the lecture takes place marks not only a junction point for the architect-theorist's career and the legacy of his theoretical apparatus, but it also marks a turning point for the tendencies of architectural theory in Anglo-American universities.

Finally, by electing to revisit the work of an architect-theorist, the following research opens a space for a treatment of theory inflected by both the messiness and vibrancy of practice: the "oeuvre" of a May '68 generation being put to work.

Autonomy, Ideology and the Consumption of Theory

Louis Martin, Université de Québec à Montréal

As in a “connect-the-dots” drawing, I provide a few points outlining roughly a line of development, which explored the potential of the linguistic analogy for criticizing the machine analogy inherited from the Modern Movement. Simply said, the linguistic analogy enabled to change the 1960s horizon of expectation from an architecture functioning like a machine to an architecture communicating like a language; the intent was to shift from an architecture determined by technological development and history as circumscribed by the concept of the Zeitgeist, to an architecture anthropologically rooted in collective habitus. Yet, the apparent simplicity of this proposal was complicated by the introduction in architectural theory of references to semiotics, as well as structuralist linguistics, and their subsequent undermining by poststructuralist theories.

Being Ecological 1

Saturday, March 30, 2019
9:00 AM-10:30 AM
Westmoreland

Moderators: Salmaan Craig, McGill University
Kiel Moe, McGill University

Deep Diving in Search of Ecological Expertise

David Kennedy, Auburn University

Per Vitruvius's pedagogy, expertise in a prescribed set of disciplines is a prerequisite for the title "Architect." The architect should be expert in all aspects of forming buildings, cities, and landscapes, and her knowledge base should be inclusive of disciplines adjacent to- and distant from her own. Far from this, a contemporary architectural pedagogy requiring only cursory engagement with satellite 'allied' fields outsources the practitioner's capacity to perform ecologically to several disassociated silos. Vitruvius's pedagogy is practically unachievable, but he offers an insight into one of its benefits, namely that the deep study of other disciplines exercises the architect's skills in adopting trans-disciplinary knowledge. An extra-disciplinary 'deep dive' trains the architect in assimilating new vocabularies and methodologies to be applied in the pursuit of ecological design.

As a vehicle for this pedagogy, studio and seminar courses narrowly focus on mass timber design. An emerging, indeterminate field, the study of mass timber is fruitful ground for trans-disciplinary engagements. The pedagogy of these courses focuses on a series of deep dives into scales outside of the architectural, namely the cellular and the territorial. Shifting scales situates students within the purview of alien disciplines, where the vocabularies and methods are unfamiliar. Equipped with preexisting design skills, students study these new scales and disciplines to glean new understandings. When examined as a constitution of cellular structures and a socio-economic commodity, the distinctions between material, technology, and economy erode to reveal an ecologically networked whole. Armed with this, the architect's decision-making engages extra-disciplinary, trans-scalar impact as she pursues a more ecologically efficacious architecture.

Operationalizing Ignorance: Post-Normal Architecture

Jacob Mans, University of Minnesota

This inquiry looks to develop a "post-normal" discourse for architecture and explores how operationalizing ignorance can become a tool for architects to develop interventions better suited to dealing with the complexity and uncertainty of wicked problems. In these contexts, where uncertainties are sufficiently high, our limited knowledge is likely produce at best partial solutions. When unknowns exceed the knowns, different design strategies – ones more inclusive of a broader community of practice – are needed to characterize this post -normal type of problem and to design effective resolutions to it. The essay concludes by discussing two workshops hosted by University of Minnesota's School of Architecture that initiated this inquiry.

Measuring History: An Active Learning Exercise to Bridge Interdisciplinary Silos and Promote Sustainability in Architectural Education

B.D. Wortham-Galvin, Clemson University
Corey Griffin, Pennsylvania State University
Kalina Vander Poel, Portland State University

A survey conducted by Sergio Altomonte (2014, 145) reported respondents' view that architectural education as a whole does not embrace sustainability as "existing educational programmes do not yet fully support the promotion of sustainable design." Comments such as these speak to the larger issues found in architectural pedagogy and paradigm. As such, this paper argues one reason sustainability has yet to be widely implemented into architectural education is because silos within architectural education impede advancements in sustainable practices. These silos, in turn, dissuade alternative teaching methods from entering pedagogy in non-studio courses. In order to address this issue, this paper outlines a recent attempt to bridge interdisciplinary silos found within architectural education through an active learning exercise that synthesized qualitative, humanities-based methods with quantitative, science-based practices.

Leaving Our Comfort Zone

Andrew Cruse, The Ohio State University

Explicitly addressing the construction of comfort provides a vital pedagogical approach to understanding and designing with architecture's ecological entanglements. Such entanglements were historically discussed in fiction as part of a civilizing process. Today, the dominance of air conditioning, and its related comfort standard, have largely eliminated the conscious consideration of comfort from architectural education. Architects' collective difficulty in formulating imaginative design responses to climate change stems in part from our inexperience with alternative theories of comfort and diverse interior climates. This paper traces how the author has integrated a comfort-based approach to teaching in a history seminar, an options studio and a building systems class. This approach removes students and faculty from our comfort zone to offer a new framework for design.

Questions of Abstraction in Beginning Design

Saturday, March 30, 2019
9:00 AM-10:30 AM
Westmoreland
Moderator: Stephen Temple, University of Texas at San Antonio

Observing Time / Employing positivist Observation as a Bridge to Abstraction in Early Design Education

Jonathan Scelsa, Pratt Institute

Much of contemporary design education is predicated on the mythos or generally accepted core narrative of 'a rupture' in western art at the turn of the twentieth century, as a rejection of renaissance perspectival space, codes of mimesis, and re-presentational realism. This rupture is evidenced in the manner that many design schools operate today, systematically employing the first semesters of education as a period of inculcating students into protocols and languages of abstraction as a means of 'breaking habits' from earlier childhood conventions and ways of seeing the world. While many art theorists have argued, that this step away from representational codes and positivist realism towards abstraction have empowered the artist's agency beyond that of the entertainer, it is also abstraction which is remarkably one of the most divisive, alienating, and exclusionary problems of entering design school today. This process aimed at opening students to a wider set of visual procedures has the potential to be seen by some as a type of brain-washing into a series of skills and visual outcomes that are foreign and endorsed by an elitist cultural regime compounded with the fact that many schools have moved to portfolio based admission requirements and inherently rewarding individuals whom had access to secondary school art historical education.

An alternative history of abstraction of the twentieth century, places the onus of invention not on the select few of the twentieth century avant-garde, but on the change of cultural visual processes that occurred throughout the 17^{th} + 18^{th} centuries, periods often relegated to and simplified to that of 'realism'. It was during this period, that the status of the individual changes from that of a spectator to that of a positivist observer, as can be seen in many achievements of 18^{th} century observers whose experiments in observing and experiencing phenomena lead to the ability to deconstruct the world into simpler and more manageable parts of vision. Simultaneously, it is during this period that the development of technologies of vision were released facilitating the general public as the observer of the procedural process of motion capture whereby the machinery behind creativity became visible. It could be argued that first-year of architectural education should be just this, expanding the vantage point to include the student as an observer of the process of viewing, in preparation to occupying the chair of the painter. In the seat of the observer, they are merely drawing what they know but with rigor.

This paper seeks to demonstrate, that teaching students first as positivist Observers, facilitates a less abrupt or ruptured transition from convention to abstraction in a similar fashion to the ways in which cultural observation techniques that evolved in the 18^{th}

+19th centuries provoked the 20th century avant-garde abstraction. The paper will use examples of recent teaching work, in which students have found abstract outcomes through positivist representations of experiencing nature unfolding in time and speed, exposing students to various digital and analog media processes in the capturing of the world before abstracting reality.

Normalizing Abstraction: Interdisciplinarity and Familiarity in Beginning Design Pedagogy

Erlene Clark, Austin Community College

In examining the mechanisms by which architecture's curricular core expresses itself, this analysis argues for a rethinking of pedagogical approaches to the understanding of abstraction in beginning design. Humans are continually learning about the world around them through their perception and comparison of new ideas and objects to familiar ones. And yet, beginning design students are often viewed as empty vessels ready to absorb any information regarding conceptual abstraction transmitted to them by design studio critics.

Regarding the development of abstract thinking skills, students can build on familiar, yet potentially underutilized, cognitive skills they already possess. Because abstract thinking does not reside solely within the domain of architecture, looking to other disciplines such as psychology and cognitive science can provide a broadening of the knowledge base in teaching abstraction in a foundation design studio. This exploration of abstraction in early, foundational design pedagogy posits that beginning students benefit from instruction in analogical reasoning, mental representation, and conceptual referents as a function of developing independent, abstract thinking skills.

Instead of causing students to perceive the disconnection between the real and the abstract, this approach relies on conceptual familiarity to bridge the mental and figurative distances between experiencing, thinking, and creating. This same phenomenon exists in other disciplines where the abstraction of information is critical to expressing intent and meaning, but the focus here is on the development of design students' self-sufficiency in creative ideation and cognitive thought instead of solely on the artifacts produced in the design process.

Synthesising Analogue and Digital Mapping: Abstraction as an Integrated Pedagogical Tool

Linda Matthews, University of Technology, Sydney
Samantha Donnelly, University of Technology, Sydney

With the representation of urban space now mediated by digital visioning technology and the digital array, new modes of qualitative data demand a different approach to the mapping, design and construction of its physical form.

Within a pedagogical context, the transition of spatial representation from an analogue to a digital mode therefore has profound implications for how the student connects seminal design processes to the sensorial realm and the physical experience of lived architectural space. The way this transition is delivered within a learning environment will thus determine the complexity and relevance of the processes that will underpin future urban design proposals arising from these types of emergent representational modes.

This paper proposes a model that delivers a highly visible, accessible correlation between the actual and the abstract through a clearly staged series of procedures or tools which work through design questions, defined as ‘design thinking’. By aligning a series of key design thinking procedures with a range of transitional tools that includes analogue drawing; photography; modelling; digital visual and audio mapping and critique, this pedagogical model provides students with a series of synthetic mapping techniques to underpin the design of the future city. Furthermore, the implementation of key Design Thinking procedures to these tools, not only forestalls any automatic validation of digital abstraction, but it converts abstract, qualitative urban data into a compelling material reality.

A Persistent Pedagogy

Brian Dougan, American University of Sharjah

Architectural education is a complicated beast. As professors and administrators, we can usually offer a sound rationale for our curricular decisions and make sure the creative juice distilled in our design studios consistently fill the air with a sweet pungent aroma. In regard to the beginning of an architectural education, the degree to which we utilize abstraction deserves consideration. As Professor Temple stated in his session brief, Questions of Abstraction in Beginning Design for the 107th Annual ACSA Meeting, “working abstractly dissolves workmanship as substantive to design because abstraction is wholly speculative - nothing tangible is realized”. It is true that an abstract approach segregates ideas from their realization. Making architecture is a different phenomenon than executing abstract architectural exercises. Thinking about architecture is more of an abstraction than making an architectural representation. Engagement in cerebral activity {captivity}, without being grounded in the gravity of physical reality is obviously an abstraction of architecture. It is fundamental to acknowledge that architectural ideas are easily misunderstood if not rendered irrelevant when limited to the confines of abstraction. This is neither a positive nor a negative assessment. By abstraction I mean the inherent limitations associated with various means of representation or the distance between the idea and its manifestation.

Architecture, Engineering and the Multiplicity of the Creative Process

Saturday, March 30, 2019
11:00 AM-12:30 PM
Cambria East

Moderator: Brett Schneider, Rhode Island School of Design

Joaquim Cardozo & Oscar Niemeyer:
The Collaboration Between a Poet-Engineer and Architect-Poet

Xhulio Binjaku, Massachusetts Institute of Technology
Caitlin Mueller, Massachusetts Institute of Technology

Joaquim Cardozo (1897-1978) was a Brazilian poet, engineer, playwright, critic, professor, and translator among other talents. Among Brazilians, he is a known poet. Among Brazilian architects and engineers, he is known as the gifted structural engineer of Oscar Niemeyer. In the rest of the world, Cardozo is virtually unknown. From 1941 to 1971, Cardozo collaborated with Niemeyer on daring projects that produced a distinctive Brazilian modernism in reinforced concrete. Together they completed Niemeyer's first wave of internationally recognized work, beginning with the Igreja São Fransisco de Assis. Their continued collaboration refined, culminating in world-famous buildings in Brasília. Ultimately, their collaboration ends in tragedy, with Cardozo blamed and jailed for the collapse of a Niemeyer design under the military dictatorship.

Although Cardozo's talents in both poetry and structures were recognized among peers, their more famous work shadowed his own. Cardozo's poetry and structural talents are intractably linked, with Niemeyer called him a "poet-engineer" while Cardozo called Niemeyer an "architect-poet." Brazilian modernism is typically understood through the sensual and free form curves of Niemeyer. However, Cardozo's engineering and, more importantly, collaboration explain Niemeyer's forms, and also form a different history of Brazilian modernism, one based on Cardozo's mix of structural principles and aesthetic expression that he made possible.

This is essay tells the comprehensive story of Cardozo in English, probably for the first time, while understanding Cardozo's collaboration with Niemeyer and his influence unknown influence on Brazilian modern architecture, focusing on their first collaboration, the Igreja São Fransisco de Assis.

Engineering a New Nation: Mahendra Raj and his Collaborations Across Disciplines

Mohamed Ismail, Massachusetts Institute of Technology
Caitlin Mueller, Massachusetts Institute of Technology

Mahendra Raj is an engineer that enjoys a challenge. Consequently, no two projects of his are the same. With a portfolio of over 250 projects and a career spanning nearly six decades, from Indian Independence to the time of this paper's writing, there is no simple explanation for who Raj works with or how he works with them. In an attempt to understand the range and extent of Raj's ability and influence on projects, this paper will examine three seminal projects from his early career. Each project will display a different facet of how Raj works with architects. The first will be Raj's close collaboration with Pritzker laureate, Balkrishna Doshi: Tagore Memorial Hall in Ahmedabad, completed in 1965. Second, the Hall of Nations and Halls of Industries, designed with Raj Rewal and Kuldip Singh, and completed in 1972 in New Delhi. Last, the Hindon River Mills, designed with Kanvinde and Rai, and built in 1973 in Ghaziabad. Each project shows a visionary engineering solution where the structure makes a bold statement and becomes integral to the architecture. Yet between them, differences emerge in how Mahendra Raj works with the architects. This paper explores those differences.

Architectural Group Practice: Biographical Episodes in the Social Organization of the Tecton Group

Andrew Tripp, Mississippi State University

This paper concerns an episode in the history of group architectural practice. In particular, I investigate the history of the Tecton architectural partnership, which was the first architectural group practice in Western Modernism. Group architectural practice, I argue, is the outcome of three historical narratives: the shifting identity of the architectural professional in England; the idealistic philosophy of Berthold Lubetkin; and the availability of analogous models in the medical practice. The first and only true group project by Tecton—a proposal for a Chest Clinic in East Hamm—will serve as my principle architectural example. Through this research we can acknowledge the distance between the original ideal of group practice as collaborative conversation and its more recent ideal as functional production.

Reinventing Gabions: How Collaboration Led to New Methods of Building Laterally Stable Walls

Rick Sommerfeld, University of Colorado Denver
Andy Paddock, RMG Engineers

In the memoirs of well-known engineers (consider Informal and Crossover by Cecil Balmond or An Engineer Images by Peter Rice) anecdotal tales of early design conversations dominate the writings. It is in this dialogue where common goals are struck, concepts are realized, and the foundations of the projects emerge.

The question then is not *if* we collaborate with engineers, but *how* and *when* we collaborate with them.

For ColoradoBuildingWorkshop, the design-build program at the University of Colorado Denver, the structural engineer is present at the first client meeting and remains engaged throughout the design process. This early engagement with students is critical to successful project outcomes. To stress the importance of these conversations, and better integrate structural engineering into the curriculum, the department now offers a support course to compliment the design-build studio co-taught by Andy Paddock, PE. This early and consistent collaboration has yielded a series of innovative projects perhaps none more successful than the 2018 project in Rocky Mountain National Park.

The project brief called for four privies along the historic Long's Peak Trailhead. Located at elevations between 10,500 - 12,800 feet above sea level, and as far as five miles from the trailhead, each of the three sites are inaccessible by vehicle. Given the sensitive flora and historical nature of the trail, each privy was required by the National Park Service (NPS) to blend into the surroundings while minimizing the physical impact to the landscape. Additionally, each structure needed to be erected in less than eight days to decrease the exposure each student would face building at such an extreme elevation. To add to the complexity, the NPS asked that each structure be light enough to be lifted by a helicopter but strong enough to sustain winds of more than 225 miles per hour.

The final design solution is a series of prefabricated structural gabion walls. Each of the steel louvers between gabion modules act as a moment frame connected by a continuous ring plate above the walls. The ring plate transfers lateral loads from one leg of the moment frame to a corresponding leg on the opposite wall. This ring plate is key to the structural system, effectively bending and transferring lateral forces around the structure, allowing the moment frames to work along their lines of action. To keep the structure as light as possible the gabion rocks were collected on-site. The rocks act as ballast for the structure and laterally brace each of the 1/8" thick steel plate moment frames to prevent them from laterally buckling. This hybrid structural system allowed the steel plate louvers to be reduced from 1/4" to 1/8" plate and the gabion walls to be reduced from their original 18" thickness down to 12 inches. This minimized onsite construction, cut structure weight by nearly 40%, and reduced onsite rock collection, and therefore the impact to the flora, by 33%.

Nebulate: Bridging Scale from Nanoparticles to Site

Beverly Choe, Stanford University
Jun Sato, Tokyo University

Over the past 200 years, plastic has developed from a nascent wonder-material to a disposable and cheap resource. This installation is an investigation of the nature of plastic when our attitudes towards plastic have become so nebulous. Working with faculty in Architecture, Structural Engineering and the Material Sciences, students synthesized aspects of each discipline to produce *Nebulate*. They probed the physical and visual properties of sheet plastic to find new potentials for this mundane material.

The installation's structure was comprised of plastic bubbles: 1/8" thick PETG sheets formed and assembled into a translucent, cloud-like mass. Students developed overlapping clover-shaped panels to form balls of various sizes and forms. They heated and formed the sheets on semispherical molds, and then finished shaping the balls manually with heat guns. Through this process, each ball acquired a unique surface of depressions and undulations. Using plastic's malleability to structural advantage, students explored how surface deformation, through dimpling and curvature, increased the strength of the panels. The aggregated balls were evaluated with axial force diagrams and buckling strength analyses, determining rules for optimal relationships between the balls. Assembled together, the nebulous forms produced a lens-like space which both framed and distorted the surrounding site: the result of intertwined architectural, structural and material inquiries.

Students collaborated with a lab in the Material Sciences and Engineering Department, developing nanoparticle-based structural color for the panels, adding another layer of visual complexity to the piece while expanding the typical scale at which one designs. Structural color relies on the interaction of light with the nanostructure of a material rather than any chemical dye or pigment to give color. The size of these structures is typically smaller than the wavelength of visible light (~400-800 nanometers). At this micron scale, one can design structures with different shapes, sizes, and materials that absorb and scatter specific frequencies (colors) of light. Students used colloidal chemistry to synthesize gold nanoparticles in water. By modifying the ratio of the starting chemicals, students altered the diameter of the gold spheres from ~10nm to ~20nm, which shifted the overall color from red to purple. The formation of the nanoparticle mixture at the microscale mirrored the deliberate spatial and structural formation of the larger piece.

Students then added polyvinyl alcohol, a polymer found in glues, to thicken the nanoparticle paint and facilitate application on the structure's plastic surface. Students applied the pinkish nanoparticle mixture in the structural dimples, producing an interplay between the material, spatial and structural dimensions of the piece. In aggregate, the large-scale pavilion form embodied ideas of plasticity through its ebbs, flows and mutations, but also between the multiple disciplines at play. When the exhibition period ended, students reconfigured the modules into furniture elements which were dispersed to dorms across campus. Through these reciprocal processes, *Nebulate* was able to operate from the micron scale to the human scale, and from the scale of site to beyond.

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Material Frontiers 2

Saturday, March 30, 2019
11:00 AM-12:30 PM
Cambria West
Moderator: Gail Borden, University of Houston

A New (Old) Paradigm on Metal Fabrication Between the Automobile and Building Industries

Ahmed K. Ali, Texas A&M University
Patricia Kio, Texas A&M University

This paper discusses a serious attempt to build a compelling case, arguing for a new materialism paradigm shift based on structuring a synergistic workflow between the automobile and the building industries. Although the transfer of technology between the two industries has seen an unprecedented increase in the last ten years primarily in robotics technologies and digital fabrication methods, the very basic fundamental aspects of materials supply- chain, fabrication processes, and waste-flow optimization have been overlooked by the design community. The story of making the stamped-aluminum skin of the Aluminum Company of America (ALCOA) building in Pittsburgh (the site of the Material Frontier call discourse) reveals a pro- found similar synergy between the Pullman company and the building design. The emerging opportunities from such a cross disciplined engagement in materials investigations allows for an informative design process that influences the fabrication territories of both industries. As such, this paper introduces a new methodology in transforming the consistent sized waste-flow of metals from the automobile industry to the building industry addressing an untapped opportunity in design within a time-sensitive circular econ- omy paradigm. The paper presents a thorough review of the ALCOA building design and fabrication processes then introduce a speculative built case study illustrating the con- version from the conceptual to the applied through a series of tactile exterminations.

Pop-Up Concrete: Rethinking Concrete Shell Structures

Julie Larsen, Syracuse University
Roger Hubeli Syracuse University

This paper investigates a computational system for concrete shell structures that translates digital modeling into adjustable formwork configurations with the use of a unique fabrication technique coined ‘pop-up concrete.’ The method is developed in collaboration with a cement manufacturer, material scientists, engineers, and architects. Typically, complex concrete structures, such as shells, require elaborate and expensive formwork and reinforcement. But with the use of advanced concrete mixes, in combination with parametric design tools that allow for the flexible manipulation of digitally fabricated formwork, it is possible to revisit complex concrete shell structures for ubiquitous, mass-customized and formally varied applications.

‘Pop-up’ is a method of using very thin, high performance concrete with a formwork that begins as a flat surface and is folded and popped up into a final form during the curing process. The method begins with digital modeling that is recalibrated into a ‘foldable’ formwork that can be infinitely altered to various configurations, depending on its material properties. 'Pop-up' has the potential to test the capacity for concrete structures to be built as parametrically varied complex geometries. The challenge is in the translation of the precise variability of digital modeling into the imprecise variations of concrete casts. This paper aims to show how 'pop-up' techniques revisit the methods of concrete shell design and construction through new computational methods and digital fabrication. The research serves as a first feasibility study with prototypes based on computational modeling that influences new fabrication techniques and identifies further challenges.

Twisted Logic | Thinking Outside and Inside the Box:
Modifying 2x4s to Productively Disrupt Light-Frame Wood Construction

Blair Satterfield, University of British Columbia
Alexander Preiss, University of British Columbia
Derek Mavis, University of British Columbia
Graham Entwistle, University of British Columbia

It is impossible to know how architecture will weather the coming decades. The world is facing massive change, including increasingly turbulent market forces, diminishing resource availability, a transition from computerized to computational work, and inevitable automation. Perhaps automation will save us, freeing the architect to refocus on inherited roles as auteurs dictating form and meaning. Maybe we are already lost, the proverbial "Frogs in the pot," unaware we are doomed to fade away as we yield to algorithms and robots. Most likely architecture will evolve, our techniques merging with technology, blurring the boundaries between design and building, policy and culture, material and programming. Whatever the scenario, it is clear that we can no longer be content to simply refine our methods. We must enter the black box and program it, disrupt it, and redirecting its output. The *Zippered Wood* process is offered as an example. This project is our novel take on wood joinery and material deformation deployed to convert standard 2x4s into formally sophisticated building components. Our approach generates form using material behavior and geometry, advancing techniques from analog production to digital (and back), and from precision fitting to precision displacement. Zippered Wood is a designed contagion that could be productively disruptive precisely because it simultaneously takes responsibility for the black box logics of material production and programming as it seamlessly adapts to standard construction practices. Zippered Wood could generate a new vocabulary of built form using readily accessible stock material (the 2x4) and waste material (salvaged lumber).

Speed Limits: The Architectural Design Possibilities of the 3D Printed Corner

Zach Cohen, Massachusetts Institute of Technology

This paper uses the example of the 3D printed corner to discuss an architectural design approach to the technical and material limits of 3D printing. The discussion begins by introducing the design of corners as a paradigm of the constantly evolving tension between architecture and materiality. The technical and material limits that define the 3D printed corner are presented along with a critique of current efforts to overcome these limits. The 3D printed corner is then situated within the history of architectural detailing. Finally, 3D printing experiments, at both desktop- and full-scale, are used to speculate on three alternative approaches to the 3D printed corner. The instrumental and architectural knowledge that underlies each approach is described along with the implications of each approach for the materiality of 3D printed designs.

Soft Architectural Assemblies: Soft Kinetics

Vera Parlac, University of Calgary

The project presented in this paper explores integration of custom-made soft robotic muscles into a component-based surface. This project is part of a broader research agenda focused on new material behaviors and their capacity to produce adaptive and dynamic material systems. The paper discusses use of a pneumatic system as a form of material-based actuation and presents ongoing research into the capacity of integrated *pneu* structures to generate kinetic movement within a component-based assembly to produce a responsive and ‘programmable’ architectural skin. This is a prototype-based exploration that demonstrates different kinds of movement achieved by different silicone muscle types and proposes a light modular construct, its components, and patterns of aggregation that work in unison with the silicone muscles to produce a dynamic architectural skin. The project is informed by a history of pneumatic structures, the technology of soft robotics, and a kit-of-parts design strategy.

Computer Composition: Design After Machine Learning

Saturday, March 30, 2019
11:00 AM-12:30 PM
Somerset

Moderator: James Macgillivray, University of Toronto
Wei-Han Vivian Lee, University of Toronto

Composing Frankensteins:
Data-driven Design Assemblies through Graph-Based Deep Neural Networks

Imdat As, University of Hartford
Prithwish Basu, Raytheon BBN Technologies
Siddharth Pal, Raytheon BBN Technologies

Over the last five years, machine learning and AI became exceedingly popular due to significant developments in the study of deep neural networks (DNN) or deep learning. Current research on DNNs focuses mainly on image and audio-based applications, ranging from self-driving cars, to virtual assistants such as Siri, to all kinds of online recommendation systems. Example applications include image classification, prediction of user choices, and generation of new images. In this paper, we present an alternative graph-based DNN approach to generate new conceptual designs. We trained DNNs with residential design represented through attributed graphs. We discovered essential building blocks based on performance criteria and composed them into new user-desired assemblies - aided by learned information about the proximity of various design components in latent vector space.

The Digital Pharmakon: The Poisonous/potential of Partial Determinism

Randall Teal, University of Idaho

Jacques Derrida described the *pharmakon*as an ambivalent “medicine” or “philter,” “which acts as both remedy and poison.”[1]Derrida’s thinking on this matter leads Bernard Stiegler to argue the reason that being-supplemented is simultaneously powerful and fraught, is because of the supplement’s *partial determinism*.

Awareness of this *partial determinism*it essential to critical relations with any technology but becomes even more elemental when humans cease being the “engines” (i.e. tools become mechanized). Such autonomy is not *necessarily* negative, but is, as Derrida says, a *heightening*of the danger; the danger being that the supplement will lead one to, “stray from one's general, natural, habitual paths and laws.”[2]

The computer is the design machine *par excellence*. As such, it is important to understand how its powers and poisons affect the “general, natural, habitual paths and laws” of architecture. One notable tendency is particularly important: the capacities of the computer have historically been more receptive to, and motivated by, a mathematical syntax of *thinking*(data processing) than a poetic syntax

of *thinking*(*poeisis: making*).[3]As computing has power increased, so have the effects of this bias.

In response to this bias, Phil Bernstein has advocated for a closer coupling of between the tools of building information, parametrics, and simulation in service of design. In this new world of practice, fees would be based on predictions and performance, with architects being paid, in part, based on how well their buildings deliver certain predicted outcomes.[4] Regardless of approach, we have reached an especially opportune point where we can become clear about what causes the digital supplement to become poisonous and with this understanding be more prepared to transform the ingredients of the poisons into beneficent capacities; capacities that *reduce* the distance between architect and architecture.

[1] Ibid., 76.
[2] Derrida, 76.
[3] Antoine Picone, "Original Culture in Architecture," 2010. http://www.youtube.com/watch?v=ytTpwTtoo6g; accessed March 26, 2014.
[4] Ibid.

Composition Parsing: Office Space Planning and Automation as Translator

Charles Driesler, Pratt Institute

The ability to synthesize design intent with computable values generates a novel method for composing space. An intermediary automated layer, between designer and their computational tools, is proposed and implemented for the space planning problem of the office test fit. This system for composition parsing, when given a combination of explicit or gestural inputs, will reduce them to a collection of small and simple problems. A reductive approach allows the system to deliver computationally easy requests to existing systems, interpret the results, and reconstruct a comprehensible output for the user. By focusing on the ability to translate disjoint compositional understandings of a given space, the system does not need to enforce a certain geometric construction of the problem or prepare layers of contingency for harder cases. It must only maintain the ability to translate between the people and systems that do. The paper opens with an investigation of how recently published algorithms interpret the composition of their given space planning target and how their implementations approach the question of user interactivity. It then outlines the three phases of the proposed system before concluding with an evaluation of its results and limitations. The paper ends with speculation on necessary steps for the next generation of this strategy and on future forms of user intervention with otherwise fully automated results.

All Along the Watchtower

Maya Alam, Syracuse University
Daniele Profeta, Syracuse University

Inevitably, buildings, like many things have two options: remain unchanged and become obsolete or adapt. Obsolete buildings, depending on their historic merit, are either demolished, become ruins or are restored to their original image. The reconstruction based on an ‘original image’ bears problems that are connected to issues of power:

essentially who decides how we see the world and therefore how we (re-)build it.

The project Watchtower positions itself at the interface between new media and architectural revitalization in order to challenge the semantic tropes that are produced when dealing with historical artifacts in a monolithic way.

The site, a watchtower erected around the XIII century, is part of the recent public initiative ‘Valore Paese - Cammini e Percorsi’ by the Italian State property office aimed to revitalize abandoned state-owned properties in the rural landscape.
Instead of molding the project to an outcome based on a single image and outline, the design conflates multiple modes of vision into new articulations of the site. In particular, the computer’s naiveté in understanding the existing historical composition of the site is exploited to provoke unexpected outcomes.

The design launches its investigation from a digital survey of the existing site. Photogrammetry, an automated technique commonly deployed in practices engaging with existing conditions, is understood here for its intrinsic ability to measure and map three-dimensionally the existing artifact from multiple point of views.

These points of observation, the partial, reductive views articulated following the algorithmic logic of the digital survey, are then instrumentalized as the projective sites of intervention.
The established, singular profile of the tower is dislodged by an image classification algorithm, whose aim is to identify pixels ‘most likely to be’ part of the characteristic stone construction of the site in order to assemble them together in a series of figure outlines.

This subversive database becomes the base of a series of automated, tentative projections and solid intersections recasting new figures on the existing tower. Guided by an approximation towards a specific volumetric addition to the existing structure, this streamlined process activates the survey images as loose generators of unexpected compositions. Ultimately, none of the individual ‘outcomes’ are singularly understood as pre-packaged projects but rather, they part-take in an archive of elements that are utilized to intervene in the site.

House with Some Neatly-Arranged Rooms

Michelle Chang, Rice University

In his 1923 essay, “Vagueness,” philosopher Bertrand Russell noted that “a representation is vague when the relation of the representing system to the represented system is not one-one, but one-many.”

Russell positioned vague representations, such as blurred photographs, in opposition to accurate representations, which exhibit one-one instead of one-many relationships. While there is an implied binary in truth values in Russell’s vague/accurate dichotomy, he believed that the imprecision of vague representations is actually what makes them more likely to be true because these representations encompass multiple potentials for verification. In 1984, mathematician Lotfi Zadeh wrote the seminal paper, “Making computers think like people,” wherein he described the application of fuzzy logic on machine processes and artificial intelligence. Zadeh similarly saw the benefits of imprecision. In his paper, he noted how a robotically-controlled car is less efficient at parking than a human driver. Because the machine responds to exact measurements, it is overly precise, while a human approximates distances. For Zadeh, fuzzy logic helped make classic mathematics and logic less precise. While seemingly unconnected, both authors reflected on the productive potentials of imprecision.

Communicating qualities precisely – whether in speaking with clients (“Can we make the blue bluer?”) or with students (“This looks too sharp.”) – is difficult because of the vagueness of language. Drawing out or designing using qualitative concepts like color, magnitude, shape, order, and type produces similar difficulties. This is because qualitative categories, like redness, have ill-defined boundaries. Uncertainty surrounding the extents of the color red stem from competing color measurement systems, such as spectroscopy and computer image processing, and because perception is fundamentally imprecise.

This project compounds the vagueness of verbal descriptions to probe the qualities of a building category. It builds upon the principles found in fuzzy logic and linguistic and philosophical definitions of vagueness to instrumentalize fuzziness in the architectural design process. It begins by finding the fuzzy sets of a set of qualities in the phrase “house with some neatly-arranged rooms” by graphing the compatibility of each word with their linguistic variables. For example, the category of houses exists in a spectrum of appearances from not house-like, not very house-like, sort of house-like, house-like, to very house-like. In this case, a pentagonal profile that represents a roof and walls is assigned to the variable of very house-like. The profile becomes more not house-like as transformations on the original profile increase in magnitude. These eight buildings represent a set of things that are house-like with some neatly-arranged rooms.

While it may seem like the application of fuzzy sets and vagueness to architectural design is similar to parametricism because large concepts and forms are broken down and assigned values, the two approaches are quite different. The primary difference is that fuzzy sets and vagueness rely on subjective values, which is what makes them so useful to artificial intelligence. What constitutes a house with some neatly-arranged rooms relies on how far one can stretch one’s conception of what that phrase means given a particular set of associations.

Unscripted: A Cenotaph for Richard Feynman

Adam Modesitt, Tulane University

Within highly complex computation-enabled assemblies, where can architects author composition? Within the procedural logic of individual components? Within procedural logic of the greater assembly? Or somewhere in-between? To these questions, this project proposes a simple answer: yes.

A speculative research project, the *Cenotaph for Richard Feynman*, explores methods for managing, organizing, and authoring complex geometric assemblies through drawing and modeling alone, without scripting, optimization, or other externalizations of compositional authorship. The project adhered to four self-imposed ground rules. First, no typing or coding. Interactive drawing and modeling only. Second, no splines or curvilinear surfaces, neither in the result nor in the design process. Rectangles and circles, cubes and spheres only. Third, no parametric, formal variation within individual components. Assemblies of standardized, discrete parts only. Forth, no fewer than million components. Massive assemblies only.

To follow these rules, a custom workflow in Dassault Systèmes' 3DEXPERIENCE platform was developed to execute the project, designed to manage assemblies of very large numbers of components using associative modeling. All project data and modeling occurred in a cloud-hosted database, without the use of files. The project was sponsored by Dassault Systèmes, a multinational software developer more closely associated with the automotive and aerospace industries than architecture, as means for exploring the use of software platforms under development for architectural production.

The *Cenotaph for Richard Feynman* was designed as a monument to honor the life and work of the physicist Richard Feynman. The project consists of steel trusswork organized around a system of interconnected distributed load paths as a structural analogue to Feynman's 'third way' path integral formulation of quantum mechanics. Sited in the industrial context of Newark Bay, New Jersey, the cenotaph is composed of over ten million standardized individual steel members that borrow the industrial tectonic of its context. Individual members aggregate into assemblies and sub-assemblies of trusses, each a unique configuration consisting of thousands of discrete components. What is automation's role in composition? A composer or a player in the orchestra? Perhaps it is neither, but instead an instrument capable of both noise and melody. It is up to us to decide the difference.

Drawing's Tacit Practices

Saturday, March 30, 2019
11:00 AM-12:30 PM
Westmoreland

Moderator: Paul F. Emmons, Virginia Tech
Ezgi Isbilen, Virginia Tech

A Country Just for Liars: The Taciturn Truth of the Orthopsychic Eye

Don Kunze, Pennsylvania State University

The other side of the tacit (remaining silent) is the corollary, that one says more than one intends to say. Put together, these are the *recto* and *verso* of the unconscious in its relation to the failure of language. All animals communicate; only the human, “the animal who speaks,” *fails* to say what it wants to say, and this very failure opens the way for the tacit dimension to convey more than the speaker meant to say. Silence's lack and the surplus of meaning are, in effect, simultaneous, 1:1. Drawing also has its *recto* and *verso*. If the drawing is made simultaneously opaque and transparent (think of the reflected ceiling diagram) then the lack of the *recto* may be corrected in a hypothetical *verso* radiating through it in an “orthography” that becomes “ortho-psychic.” In fact, this same logic was used to produce the Panopticon, arguably a building that literalizes the section drawing on behalf of a project of self–surveillance. This essay uses the ancient figure of Perdix (Dædalus’s murdered nephew, restored by the gods as a partridge, a bird that always flies close to the ground) to develop a new idea of orthographic methodology that, by emphasizing the role of the part, replaces the detached viewer of perspectival representation with the touch of the blind (but synesthetic) architect, operating within the thin poetic field just above the paper’s surface.

Delayed Processes

Pari Riahi, University of Massachusetts, Amherst

The work presented in this paper is based on a set of pedagogical investigations that are based in the author’s simultaneous fascination and trouble with the wide spread use of digital media leading to seemingly complete and multi-faceted drawings which impose themselves as definitive, over-determined renditions of ideas. In the interest of slowing the process in the early design phases, where students are learning about developing design thinking, an effort has been made to make time still and slow, allowing for ambiguity, contradiction, deformations and distortions to unfold within the space of architectural thinking, before passing into more conventional forms of drawing. In attempts to stay away from the form-based and the process-oriented paths, the structure is set to use conventional platforms of digital drawing as the basis for the project. By focusing on the making of drawings at various scales and with different purposes, the studio is one that binds the design and drawing together and requires that the students navigate the process of creative thinking by making and assessing a large body of drawings. Embracing the idea of drawings that are of the project, and are not directly translatable to space, implies that in the space between the early ‘generation drawing’ and something that can intelligibly be recognized as architectural artifact/

space, there lies a gap within which withholding from getting to an immediate result yields both the most challenging and the most interesting architectural artifacts. The aim of the studio is to make drawing into a practice that is flexible and canny, able to adjust and responsive to multiple factors and forces introduced at different stages of the project.

Co-operating with Notational Language: Full-scale Drawing Practices of Traditional Carpentry in Southern China

Adam Brillhart, Xi'an Jiaotong-Liverpool University
Ken Yeung, China Academy of Art

This paper discusses the "representational framework" unique to drawing practices of carpenters in Southern China. The representational system not only integrates their practical experience but also places a reproducible world model in the quasi-linguistic framework operated between tool and component. Full-scale ink markings are discussed as a "notational language" which condensate construction activities around linearization of symbols in full-scale. This hidden structure of traditional form is distinct in its closeness to construction from the dominant forms of representation in the world since the European Renaissance. The "minimal signifying units" of this particular drawing practice are discussed as a foundation of a special kind of "operational memory" arising through systematic experience. This representational system yields not only an elastic mode of construction in which joint-making generates open meaning, but also a "habitus" of drawing which has undergone regional adaptation.

A New Unity: the Illustrious Drawing

Carolina Dayer, Aarhus School of Architecture

Critical of the abstractions of Expressionism and the tragic outcomes of the first mechanized war, *Neue Sachlichkeit*, an art and architecture movement, also entitled Magic Realism by the German art critic, Franz Roh, conceived new forms of representation that praised the objects and routines of everyday life in a precise yet mysterious manner. In terms of representation, the intention was not imitation; but to present reality anew based on concrete apprehensions of the world. Almost 100 years after *Neue Sachlichkeit*, the question of how to reconnect with the construction of reality and the pervasiveness of technology has led to remarkably similar forms of expression in today's post-digital illustrations: restrained and sober scenarios, pensive characters, strange light conditions, material tactility and a general sense of nostalgia. The necessity of a meaningful connection with the richness of technology once again is evident and has become the source for unexpected turns in cultural production that puts tacit knowledge back to work. More and more this form of representation has entered the language of architecture. And contradictory to Nicholas Negroponte’s statement, being digital is noticeable in its absence not because of its technological presence, but because of its purposeful humanized aura.

A Critical Review of Dalibor Vesely's Hermeneutic Theory of Architectural Drawing

Joseph Bedford, Virginia Tech

The paper critically reviews Dalibor Vesely's hermeneutical theory of architectural drawing, a theory which explore representation as a making explicit of the implicit or "latent" background of daily life. It repositions Vesely's hermeneutical theory in light of the recent two decades of what can be termed "post-hermeneutical" or instrumental theories of drawing that were largely indebted to the historical and theoretical writing of Robin Evans.

Yet in light of more recent history, the paper raises doubts about the ties between the post-hermeneutical orientation of Evans's theory (as well as the pragmatist logic of those who inspired by his writings) and the post-ideological historical moment in the 1990s in which this theory developed. It asks whether, from the vantage of a post-2008 world, how a hermeneutical theory of architectural drawing might amend the post-hermeneutical theories of the past decades and play a role in reconstituting architecture's relationship to our cultural reality understood once again as also an ideological reality.

The paper concludes by calling for a conception of drawing and architecture which synthesizes these two positions, and avoids the pitfalls of each. It asks us to imagine a conception of representation that is doubly responsible for the cultural meaning of the world as well as the means to change it.

Being Ecological 2

Saturday, March 30, 2019
11:00 AM-12:30 PM
Westmoreland
Moderator: Salmaan Craig, McGill University
Kiel Moe, McGill University

Simulated Form: Non-Figurative Representations of Ecological Objects

Dana Cupkova, Carnegie Mellon University

The question of ecology in architecture is rather new, lacking a comprehensive historical dimension beyond the last two decades. In schools of architecture and in design practice in general this question is being primary framed through the lens of ethical sustainable imperative and one's implicit or explicit attitude towards environmental ethics. *Anna Bramwell* (1989) in her theory of political ecology places the rise of *ecologism* to 19th century, with two distinctive strands of thinking. The first influenced by Ernst Haeckel's anti-mechanic, holistic approach to biology, and the second focused on the problem of scarce and non-renewable resources, an approach defined by energy economics. This duality of approaches is rather rampant in the current academic landscape of ecologically concerned architectures, inherently setting up the dialectics between substantialism and aesthetics in design. The substantialism typically relying on metric-based approach towards positive accounting of environmental goodness and the aesthetic approach exploring new representations of social and cultural narratives about the role of nature in architecture of the Anthropocene. The work presented here resources both strands in the effort to use scientific inquiry within exploration of an aesthetic language.

Resourcing these ideas this paper describes a pedagogical approach to design workflow that inquire into energy and matter as a primary inspiration, while re-examining the role of context as a descriptive force. Perfomartive models for design have now exhausted their breath and fidelity largely by reducing context to a fixed information set, queried through measured simulation sets in a singular moment in time and space. Promoting a shift away from the data-driven rationales of performative models the desire of these design exercises is to tap into architectural sensorial subjectivity as part of the aesthetic and ecological experience.

No Longer an Object: Thermodynamics and New Dimensions of Architectural Design

Dorit Aviv, University of Pennsylvania

A reconsideration of what constitutes the 'design space' today from the perspective of thermodynamics is necessary in order to expand the realm of architecture into new domains. Building form is dominated in every era by the technological means that produce it. Today, the ubiquitous representations of architecture on computer screens as a context-less object in an empty virtual Cartesian space inherently ignore its architecture's constant energetic exchange with the human body and its environment. These exchanges extend not only to a building's immediate surroundings, but all the way to the cosmic scale of the sky and the stars. A pedagogy that engages architecture students with climate and ecology must therefore develop new tools of representation that embody these multi-scalar relationships. In this article, projects produced by students in the design studio are examined as means to both characterize energy flows and intervene on them. As such, they are not just registers of environmental knowledge and sensory data but a first step in redefining the relationship between architecture and the environment.

From Matter to Design: Empirical Experiments with in a Design Context

Alex Timmer, University of Wisconsin-Milwaukee

The intractable problems of architecture have remained not from a lack of attention but a lack of innovation in how architects explore, research, and reason within the bounds of those challenges. The lingering after-effects of this reality are reflected in, and potentially corrected through, the education of architects within the academy. Paramount to this reading of architectural pedagogy is the history of architecture as an object; the dominate historical mode of education within the academy. Opposed to that pedagogical practice is the emergent understanding of architecture as a system. This view of architecture invites a reevaluation of building and design through the lens of the isolated, closed, and open system. This filter then reorganizes the architectural canon into flat sculpture, form that is diametric to performance, and thermodynamically deep systems. These new categories break from the linear historical narrative of architecture, grouping buildings by their attitude towards their system boundary. This view of architecture demands opportunities for new methods of teaching and practicing within a design studio. In this essay, the empirical experiment will be posited as a prime methodological answer to this new epistemological regime. The empirical experiment, with its necessitated delimitation of a system boundary, offers the studio education a methodology for engaging the thermodynamically deep architecture: engaging form, matter, and performance as dialogue at various scales. Through an examination of a series of exercises from a design studio, the premise and execution of empirical experiment within a design context will be examined and articulated. Particular attention will be paid to the success and failures related to the translation of the empirical experiment to a spatial construction, as each shift in the system boundary of the project is imposed on the students.

Constructing Unimaginable Subjects:
New Economies of Architecture, Design, and Ecology

Filip Tejchman, University of Wisconsin-Milwaukee

This paper presents studio work that examines the ecological liabilities associated with an architecture-as-service model of practice.

Becoming Digital 1

Saturday, March 30, 2019
11:00 AM-12:30 PM
Westmoreland

Moderator: Ellie Abrons, University of Michigan
Adam Fure, University of Michigan
McLain Clutter, University of Michigan

Making It Possible

Gabriel Esquivel, Texas A&M University

Digital transformation relies on connecting data, systems, people, and processes. Integration technologies have traditionally formed the nervous system of a large enterprise. But the human nervous system doesn't just connect information it senses; it also acts on data in real time. A digital technology platform augments the intelligence of a digital practice by building on its ability to connect, to learn, and to act automatically, thereby enabling the next stage of a digital transformation.

Digital tools help to improve and potentiate the discipline as well as the practice of architecture; they facilitate the integration of active methodologies that any digital model requires. We can find technological inputs that fulfill the function of serving the practice and education, but very rarely do we have the opportunity to find tools that can serve as robust inputs and allow the computer to become a critical tool that will completely change architecture culture. Herein, I argue that the "post-digital" is a cultural problem rather than an evolving technological problem.

Technology applied to architecture creates another way of thinking about it, as cultural phenomena that will have very important effects on the discipline and the practice. It is the original and responsible new way of creating, thinking, and designing.

The central argument of this paper is that the group of young architects identified as Possible Mediums started a new discussion regarding the digital during the Workshop at The Knowlton School of Architecture in 2013 and allowed the "post-digital" to become a new conversation in American Architecture.

From the Digital to the Discrete

Mollie Claypool, University College London

This paper will acknowledge that the discipline of architecture, which was foregrounding and highly influential in its adoption of digital tools in the late 1980s and early 1990s, has to now rethink entirely what 'becoming digital' has meant for architecture in order for it to continue to be a social and cultural pursuit, able to provoke and enable real change for those who we are meant to serve. What are the social, economic and political consequences of the digital for the production of architecture? And how can cultural changes – in the structure of our communities (familial or otherwise) and in the way that we relate to our virtual and physical environments – be responded to by architecture in a way which empowers and enables these communities to be active co-producers of their virtual and physical environments?

The paper will critique previous generations of ‘digital’ designers, speculating on how an all-digital discrete approach to architecture could enable architecture to be able to provide possible answers to the above questions. It will present aspects of a theoretical framework that promotes a possible answer to the consequences ‘becoming digital’ has had in the architectural discipline through the concept of the ‘all-digital’ and the 'discrete'. It will refer to work in philosophy and cultural theory that speculates on full automation as happening in the near-now and align itself with the work of left-accelerationists such as Nick Scrnicek, Alex Williams, Benjamin Bratton and the Xenofeminist collective Laboria Cuboniks. Towards the end of the paper possible potential avenues for development of the ‘discrete’ will be briefly demonstrated through projects developed over the last several years with students from the Unit 19 in Design Computation Lab, which is directed by Mollie Claypool, Manuel Jimenez Garcia, Gilles Retsin and Vicente Soler at The Bartlett School of Architecture, UCL.

Exploiters, Amplifiers, Permutators and Teachers: Four Paradigms of the Human/Machine Relationship

Erik Herrmann, The Ohio State University

What is the role of the designer in an era of computers with rapidly increasing discretion? In what ways does ubiquitous computing shape the design process? How is the author/user relationship destabilized in acts of digital design? In response to these pressing questions, this paper speculates on the status of authorship in several contemporary models of computational design. The current situation is framed by the prescient writing of Abraham Moles, a French engineer, sociologist and philosopher who cofounded the little known but remarkable Information Aesthetics movement. Of particular relevance to this research is Moles’s work on the shifting status of authorship in systems of creative production. This paper briefly outlines four of Moles’s scientific models of computer-aided production offered in his 1965 essay entitled, “Cybernetics and the Work of Art,” then speculates on how his prescient models for the human/machine relationship might be used to provisionally organize the contemporary field of digital design and its tendencies. The status of the author, the user and the public in the computational design paradigms, both established and emerging are briefly considered through the lens of Moles’s radical work.

Command and Ctrl: How Digital Became Us

Galo Canizares, The Ohio State University

Looking at the politics of software, this paper proposes that computation was never free from cultural bias. Early computation embedded military, workplace, and domestic values into its structures, and as the field professionalized itself during the late 20th century, it excluded input from diverse social groups. Software eventually became a mechanism that, under the guise of user-friendliness, obfuscates more than it reveals.

If “becoming digital” suggests that architecture has embraced and is inseparable from computation and software, then the logical next step is to identify the limits and merits of such a symbiosis. While scholarship during the previous decade primarily addressed technical means through which design disciplines became digital, this paper will introduce the political dimension of software. Referencing the work of Wendy Hui Kyong Chun, Lev Manovich, and other media theorists, I will argue that the systems used to produce architectural media are neither benign nor unbiased platforms that are active participants in the design process. Humans did not simply become digital, but the digital also became human. Embedded within these machines are all of our flaws and understandings of the world, be it aesthetic, technical, or political. In other words, software's role in design could be regarded as ideological and therefore warrants a critical approach.

THE IMPLICIT MIDDLE: FEEDBACK PROCESSES IN PRACTICE AND PEDAGOGY

Saturday, March 30, 2019
2:30 PM-4:00 PM
Cambria East
Moderator: Cameron Wu, Princeton University

Pre-Cast Tectonics A Material Approach to "Integrated Building Design Studio"

Roger Hubeli, Syracuse University

Arguably the goal of a 'comprehensive' studio is for students to develop and prove the capacity to integrate different technical and possibly legal and financial considerations into their architectural projects. In this context it is most important for the students to learn how to maintain a clear conceptual strategy that can serve as a 'pièce de résistance' against the multitude of different pressures, providing a larger framework for decisions. In the case of the here presented studio work this 'pièce de résistance' was based on the design potentials of pre-cast concrete construction. Tectonic concerns with a focus on structure, construction and materiality were foregrounded. Meanwhile, other aspects such as program and building form were intentionally pushed to the background.

To pedagogically enforce this strategy, the students were given very specific parameters for the typology of the building as well as the methods of construction, focusing on speculations on the potential of concrete prefabrication.

Concrete is one of the most used materials in today's construction around the globe. Although the use of this material dates back to ancient Rome, it is also a material that has time and time again been adopted and transformed by new technological innovations. Over the last decades, there were massive improvements in many aspects of concrete technology. New mixtures and improvements in reinforcement allow among other advancements for concrete that is stronger, more durable, highly insulating or even ductile. Ultra high performance (UHPC) allows for applications that are thinner and span further than "traditional" concrete mixtures. Highly insulating concrete allows for one with walls, where otherwise a multitude of constructive layers would be needed and the reduction of the cement content through the replacement of cement with industrial by-products, such as fly-ash allow for a sizable reduction of the embodied energy. The development of new concrete technology has, therefore, been an important aspect of the advancements in the construction and material industry.

As a point of departure, the studio explored, in an initial exercise, the relationship between positive and negative, form and form-work, as well as part to whole relationships through the development of a fragment of a possible larger system. The exercise forms an initial spatial and constructive study that encompasses abstract principles, while introducing the students through the act of making to the basic fabrication questions that arise when working with (pre)-cast systems; exploring the concrete as both, a material that can take on nearly any form, as well as its potential to be cast into building components that aggregate into a larger system.

The results of the exercise were then used by the students to develop a building strategy that is constructed ‘from the inside out’, contextualizing the program and the site through the constructive system and formal language that emerged from the translation of their initial studies into a more robust architectural project.

Mixed Robotic Interface &[Gamma]: Searching For a Hybrid Cyber-Physical Design/Experience Interface Through Virtual/Actual Robots

Ebrahim Poustinchi, Kent State University
Trevor Swanson, Kent State University
Brad Bowmen, Kent State University

Mixed-Robotic-Interface Γ—as part of Mixed-Robotic-Interface series of research projects, focuses on using “actual” and “virtual” robot-arms as possible creative medium and extensions of design/gaming environment. Mixed-Robotic-Interface Γ follows Sylvia Lavin’s “Man vs. Machine” retooling creativity exhibition conversation, where Lavin asserts that Increasingly larger amounts of creative resources are being put into producing new tools and concepts that are designed not to make things but, to amplify the creative capacities of others (Lavin, 2015)[1].

Enhanced with both augmented reality techniques and projection mapping methods, Mixed-Robotic-Interface Γ presents two projects: “Child Robot” and “Robotic Pool Party!”

ROBOTIC-POOL-PARTY! Designed and exhibited as part of the A+D Architecture and Design Museum in Los Angeles, “Robotic-Pool-Party!” project revisits the potential of virtual animated robots and projection mapping as a method for experiencing the space and creating atmosphere through storytelling.

Migrated from the assembly-line of a factory, the robot at this pool-party becomes a “humanoid” and the ultimate "user" of the experience. Interacting with its surroundings, the robot—in combination with its context, becomes a medium in which, the audiences, experience the atmosphere of the installation. In addition and through poche and sectional studies “Robotic-Pool-Party!” also examines the potential of fake-depths created using projection-mapping and in contrast to project’s three-dimensional canvas. In response to the notion of object-inside-object as Tom Wiscombe describes[2], “Robotic-Pool-Party!” aims to amplify the atmospheric contrast between the dark plain cubic physical canvas of the projection and the vivid, playful, dynamic and active projection content. The Section is dynamically changing to illustrate the difference between the outside and “inside” of the created depth as a way to engage the audience in the story/atmosphere that the project is aiming to create.

Child Robot The Child Robot project, studies the relationship between actual and virtual, using a robotically animated hybrid—digital-physical scene/stage as the vehicle. Using Oriole—a custom-made robot and camera-controlling platform, child-robot examine the potential of a hybrid digital-physical set-up to design, tell a story and visualize that.

The story is set in a para-fictional scenario on the speculation of a future child's room. The set-up is the result of a precise calibration of the physical robot-arm, the virtual robot-arm and the virtual animated kit-bash scene to enhance the experience. Using augmented-reality techniques, Child Robot enables the users to experience a mixture of reality, fantasy, actual and virtual through a custom-made software application and an actual scene.
Child Robot project, questions the potential of hybrid digital-physical platforms as not only design, representation, and simulation tools but ultimately as a source for spatial experience and storytelling.

Acknowledgment: The ROBOTIC-POOL-PARTY! was exhibited as part of the 3Ways show, curated by Anthony Morey, Ivan Bernal, and Ryan Tyler Martinez, and projected on physical canvases design and fabricated by them and their team.

[1] Lavin, Sylvia. (2015, July 13). "Man vs. Machine: Sylvia Lavin Retools Creativity." Los Angeles Forum for Architecture and Urban Design. Retrieved from http://laforum.org/delirious/man-vs-machine-sylvia-lavin-retools-creativity/
[2] Wiscombe, T., (2014). Discreteness or towards a flat ontology of architecture. Project, (Issue 3), 34-43.

Swivel

Andrew Colopy, Rice University

Set among the sublime Icelandic landscape is a series of subtly enigmatic figures. Each a little different, their faceted mass responds to the environment at multiple scales. Adapting to immediate context and global orientation, the cabins maintain a predominant east-west axis while pivoting perpendicular or parallel to the approaching trail. The strategy affords a consistent southern facing roof for active and passive solar gain while serving as a means of cardinal orientation to hikers. The end of each cabin addresses an intermediate scale, swiveling to gesture toward the next cabin along the trail, further orienting hikers from the exterior but also from within as they gaze out the singular windows in the attenuated ends of each cabin, reflecting on either where they've come from or where they're headed. But this swivel also formally connects the larger network of cabins, making them both unique and interdependent while further reflecting the extent of the national territory they inhabit.

As objects in the landscape, the cabins are set apart and responsive to their environment, yet given the dark exterior, they appear equally as voids, background to the strong saturation and figuration of the surrounding scene. The exterior rain screen is continuous across roof and wall, reinforcing a volumetric quality while absorbing the warmth of the sun. Made from charred wood, the material is also exceptionally durable and sustainable while familiar to the local context. Aesthetically integrated, photovoltaics and rainwater collection and storage help the cabins be autonomous, and heavily insulated SIP construction makes them highly energy efficient, easily transported and assembled.

Inside, the dark exterior gives way to a bright, continuous plywood surface punctuated by spots of color, a reference to the bold exterior coloration of many vernacular cabins.

Fold down bunks for 10 along the long high wall fold up to make extra space to gather in an efficient 350sf (32.5sm).

Professional Landscapes at the End of Education

Federico Garcia Lammers, South Dakota State University

This project is based on an assumption about the end of architectural education. Most formal architectural education culminates in two paths: the individual thesis project or the practice-based internship. The latter path is wrought with the practicalities of professional anticipation, while the former is bound by disciplinary expectations to articulate novel theories. This project focuses on a graduate studio that addresses how to end architectural education by combining professional practice, precedent study, and speculative research.

The work from the studio is a forensic investigation into the decision-making and execution of an existing building. In their last semester of study, graduate students collaborate with one architecture firm to research the critical workflows of that practice. Through the making of time-based images, students explore professional networks by fetishizing ubiquitous and seemingly dull processes, such as, meeting minutes, field observations, specifications, emails, etc. There is a great deal of “non-architecture” work performed by architects and introduced to students in professional practice courses. Many faculty and professionals remark with frustration, “I worked on emails, RFIs, specs, etc. I didn’t do architecture today”. What would happen if processes that are typically excluded from graphical representation had to be used to articulate the ideation and execution of a building?

Since 2016, there have been twenty students, six professional practices, fifteen architects, and three faculty involved in the studio. Practitioners facilitate the exchange of existing data, arrange site visits, and participate in studio reviews. To frame the student work, Forensics is referred to in three ways: 1. Referring to the forum and the practice of making an argument before a professional or academic gathering; 2. Referring to the techniques used to develop investigative strategies and tactics; 3. Referring to the non-linear sequencing of events. These three criteria are synthesized into three steps that connect the studio schedule with its intellectual scope.

The first step is an investigation of the building’s effects – basic functions and the relationships among owner, architect, financiers, and building professionals. After being connected to the project’s architects, engineers, contractors, and clients, students interrogate the situation and graphically dissect the building. The second step is connecting the facts of the project into a plausible story of how the project reached its end. In this phase, students are graphically mapping out webs of interconnectivity between people, tools, and place. Webs are mapped by analyzing documents and data shared by the architecture firms. The third step is the graphical telling of each of these stories of a building process, and representing the building to the project’s progenitors. The three steps are based on linking broad disciplinary questions to under examined professional processes.

The results from the studio are a series of data-driven landscapes that articulate the immaterial decisions affecting the practice of architecture in a specific place. In a technical age of expansive communication tools, these professional data landscapes highlight disciplinary questions rooted in architectural authority. This work hinges on the ability to theorize about professional work, instead of professionalizing theoretical work.

Geometry, the Metrics of Space and Its Architectural Instruments

Saturday, March 30, 2019
2:30 PM-4:00 PM
Cambria West
Moderator: Joel Lamere, University of Miami

Registering Absence: Shadows as Objects

Tithi Sanyal, University of Michigan

Shadows contain information not otherwise evident in architectural drawings and representation. From the techniques of skiagraphy and the teachings of the descriptive geometry of the Beaux Arts period, shadows have been considered a ‘mechanical procedure of projection’ by many critics including Robin Evans in *Architectural Projection* .[1] As we transition into the digital era, shadows are no longer considered deliberate design intentions but a consequence of computational algorithms through the use of rendering software. Moreover, the freedom to pan, orbit, and place light sources in a virtual space has altered our understanding of shadows and scales. The project positions shadow as a design tool by formulating a relationship between skiagraphy using orthographic projections and digital rendering of the 21st century. It investigates how shadows can evolve from a descriptive tool to a technique of generating forms.

In Beaux Art architecture drawings, shadows drafted as 45-degree projections capture the subtleties of architectural elements and spaces. Draftsman use shadows to emphasize architectural qualities of a building including texture, color, relief, proportions, and scales. American architect and educator Henry McGoodwin, known for his influential publication *Architectural Shades and Shadows* (1904), writes:

> “The student should realize at the outset that in casting shadows on architectural drawings he is dealing with materials of art rather than with materials of mathematics. The shades and shadows of architectural objects are architectural entities, having form, mass, and proportion just as have other architectural entities.” [2]

Shadows thus were a descriptive tool that captured the design intentions of the period not otherwise evident in a drawing. In today’s digital era, we associate shadows as outcomes of simulation. John May in *Everything Is Already an Image,* states that:

> “the world of the post-orthographer is simultaneously an image and a model… But unlike drawing, imaging does not want to be a representation of the world, it wants to be a presentation of the world- an automatic and perceptually up to date, real-time model of the world.” [3]

As May points out that for a post-orthographer the shadow doesn't want to limit itself to a representation. Its goal is being spatial with materiality and form. The project understands how skiagraphy operations of combining two and three-dimensional projections on plans and elevations can be assimilated into digital modeling, thereby generating newer forms.

The technique developed in translating the ephemeral nature of shadow into a permanent mass and volume is tested on the ruins of Palmyra, an archaeological site in Syria. To appreciate lost architectural information, the project utilizes drawings from early 19th century BCE compiled by the traveler Robert Wood; thereafter creating shadow objects of the missing architecture. The project no longer considers shadows as mere information, but as a physical construct that registers the absent or visually unseen. The shadow object is a fossil for architectural information.

[1] Robin Evans, "Architectural Projection," *VA 11*, (1990): 134
[2] Henry K. McGoodwin, *Architectural Shades, and Shadows* (Boston: Bates & Guide Co.,1904), 12
[3] John May, “Everything Is Already an Image,” *Log 40,* (Spring/Summer 2017): 19

Promiscuous Geometries

Xhulio Binjaku, Massachusetts Institute of Technology
Anne Graziano, Massachusetts Institute of Technology

Promiscuous Geometries is a set of ornamental objects created from shadows. This project looks to shadows as a medium for design. Shadows are a *resultant* of light obscured from a surface—shadows come *after*geometry. However, this project reverses that order and starts with shadows to make geometry. The resultant geometry is not a pre-rationalized form but found through a mixing of shadows—a shadowplay. The resulting geometry is surprising and ambiguous, we call it promiscuous, however closely tied to an understanding of geometry. While shadows are clearly important to architecture—no building, or photo of building, would be complete without them—they have typically been used in characteristically experiential terms, as exemplified in Jun'ichirō Tanizaki 1933 essay *In Praise of Shadows*, while the shadows geometric capabilities have been underused. Promiscuous Geometries begins with shadows and uses anamorphic projection and Boolean operations to produce a set of 3D geometries.

To create a Promiscuous Geometry, begin by drawing any two shadows which are closed. Now loft theses shadows onto two points in space opposite from one another. When a closed shape is lofted to a point, a conic surface results, similar to the art pieces *Solid Light Works*by Anthony McCall. When the shadows are lofted to opposite points, their resulting shadow cones intersect. Using a Boolean intersection between the two shadow cones results in a closed geometry with each of its surfaces being conic. Since the resulting geometry is conic, its surfaces are developable, and the geometry can be unrolled flat and reproduced again from flat sheets. We laser cut the panels and assembled them together to form the 3D geometry, attached a string to hang and filled the geometry with white plaster. Once set, the geometry contains the original shadow data which can be shown when a point light, like a phone flashlight, shines onto the geometry. When two point lights are on the geometry, both shadows can be seen simultaneously. Therefore, a reciprocity is built between the Promiscuous Geometry and the shadows from which it was drawn. This experiment can be repeated with various shadow shapes.

While this project shared affinities with post-digital project, namely its witty, vague and primitive forms, it not regressive. And thought the project proposes a formula of combining shadows that can result in endless generative forms, it is not techno-optimists. Like the shadow art of Tim Noble and Sue Webster, from which this project takes inspiration, the project is a resultant of a clear understanding of geometry that speaks to the longer history of shadows as a useful design tool. With shadows architects can *produce*geometry, instead of simply *consume*it as Robin Evans stated.

Isovists and the Metrics of Architectural Space

Michael Benedikt, University of Texas at Austin

Joel Lamere's prompt for this session of the 2019 ACSA Conference asks whether there are metrics other than the calculus of curved surfaces for making architecture. There are, and isovist theory provides a family of them. Developed continuously since 1979, isovist theory (and its 'cousin,' space syntax) has accumulated a considerable literature. With advances in computing power and coding techniques, isovist theory is poised to enter both design and design research processes fluidly and in a visually arresting way. This paper reviews the basics of isovist theory, discusses the software application ISOVIST, and concludes by discussing how isovists and isovist fields represent a new approach to deploying geometry's experiential/relational power, to "metricising" architectural space, and to understanding what space is.

Ordinary Geometry

Mark Ericson, Woodbury University

The relevance of drawing in a discipline immersed in digital technology is increasingly under scrutiny. At the center of this problem is architecture's core representational strategy, orthographic projection. However, if instead of considering it as method for the projection of views it is understood as a series of operations used to calculate form independent of visualization the problem is different. It becomes a problem of translation in lieu of simulation. Rules initially used to govern the relationship of marks on a piece of paper or stone can be used to govern relationships in a digital environment, producing distinct images independent of references to historic media or no images at all. This paper argues for the projective role of history in the implementation of technology. It focuses on the most ordinary type of architectural drawing, orthographic projection, and speculates on its potential to be re-imagined as a digital process. It begins with the reconstruction and formal analysis of the orthographic drawings of the Italian architect Guarino Guarini (1624-1683) and concludes with the translation of his techniques into digitally animated drawings. In lieu of understanding the development of architectural drawing and geometry as one of linear progress, it argues for the projective role of history in the development of architectural technologies.

Architecture's Politics of Appearance

Saturday, March 30, 2019
2:30 PM-4:00 PM
Westmoreland
Moderator: Jason Young, University of Tennessee-Knoxville

Resistance and Control: The Paradox of Architectural Agency

Marc Maxey, University of Nebraska-Lincoln

The totalizing environment of the city served as both tension and inspiration for 19th and 20th century avant-garde architects and artists. The metropolis functioned as the site for utopia simultaneously constructed by the dystopia of capitalism itself. Individuals comprised the mass of a public, which served as the subject of speculation for critique and new projective realities. For Tafuri, this marked a paradoxical relationship between the synthesis of art and life as inextricably linked to the modes of production within the city itself. In other words, because capitalism engendered avant-garde artists and architects their attempts to mediate the experience between art and life was inherently fraught with paradoxical representations of capitalism itself. However, the paradoxical slippage between cultural omniscience and participatory critique approximates a “black box” of agency for the avant-garde. The post-digital moment in architecture follows a similar trajectory through its techniques, strategies, and paradoxes of mediating the current digital environment while attending to architecture’s disciplinary core.

Infrastructural Ubiquity: The Case of the Defense Highway and Space Complex

Jeffrey Nesbit, Harvard University

The design of infrastructure, and its systematic logistics, produces a ubiquitous rationality based in the appearance of politics. While the aesthetic and formal qualities of infrastructure can be criticized for being too rigid, focusing on functionality and structural performance, it is these very qualities that allow for its pervasive deployment. Not all architecture makes its appearance in this way. If we are to consider Mark Wigley’s provocation that Architecture is as much of a discursive project as a constructed or functional one (Wigley, 2002), an architectural act appears to be a repeatable and evolving political imaginary. This paper explores the relationship between two disparate cases of U.S. national infrastructure, the defense highway and space complex. We examine the way in which architecture makes its appearance through the repetition of image, structure, and landscape—revealing a politic as opposed to engineered rationality. The study is not framed through modes of mobility—automobiles, trucks or rockets. Instead, this paper illustrates infrastructure through its national image, disguised by ubiquitous functionality. The U.S. defense highway and space complex describe an architectural process on state, national and global scales - built out of military geopolitics, projecting itself as *appearance*, *elegance*, and *ubiquity*.

Infrastructural Ubiquity: The Case of the Defense Highway and Space Complex

Ernest Haines, Harvard University

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Who, Mies? Interrogating the Federal Center Courthouse and the Trial of the Chicago Seven

David Shanks, Syracuse University

Among the many 'outputs' from architecture's 'black box' are the historical events that a building has witnessed. This essay interrogates Mies van der Rohe's Federal Center Courthouse through an analysis of the events of the Trial of the Chicago Seven, which was held there from 1969-70. In doing so, the essay reveals how Mies subverted the conventions of courtroom design, and consequently disrupted the precise rituals and power relationships that comprise the performance of jurisprudence. Specifically, Mies removed "the bar" from the courtroom space, which typically divides spectators from trial participants, producing a Brechtian estrangement of the courtroom and of trial procedure that played out in the various forms of misconduct that marked the theatrical trial.

Under Maintenance: Come in Now!

Sergio Lopez-Pineiro Harvard University

The relationships that exist between the academic and the industrial worlds are often set in practical and mutually beneficial terms: companies fund advanced academic research in exchange for permission to commercially exploit any useful findings. Despite the unquestionable educational and commercial values provided by this type of relationship, I would like to propose in this article a different vantage point from where to establish a relationship between design (as a form of cultural inquiry) and industry (as a form of applied research). The role of this vantage point would be to reveal unexpected spatial and temporal gaps in the functioning of specific spaces. But, while a traditional industrial model would attempt to fill in these gaps, 'fixing' them in order to maximize the efficiency of the spaces, I propose protecting them with the intent of occupying them with unexpected and unrelated programs. Parking infrastructures along with their maintenance services is the industry I will be briefly examining as an example with which to make the argument. The myth of architecture as a “black box”—along with its complete and stable appearance—has helped establish the status of the many different artifacts of the built environment (buildings, parks, and so on) as intense urban singularities. Completeness and stability are generally expected to define the character of architectural artifacts. In this context, a new type of relationship with the industrial realm can be the means to define a new architectural character that would open up architecture’s “black box.”

The Thing with Thingness

Jacqueline Shaw, Rhode Island School of Design

The architectural detail is no longer just a both/and proposition but an act of extreme expansion and contraction happening at the speed of a thumb swipe or scroll along a digital surface. Waffling between realities of economy, politic, and aesthetic, the lines, scores, and dimension that are eradicated when faced with pressures of clarity and brevity, and the celebrated imaging of a spatial success, details, and therefore practitioners and academic alike, are required to be nimble, adaptable, and the constant that can take on the weight of filling a 1080 x 1080 pixel square to image process, care, obsession, and professional precision, and provide enough scale for the buy-in and believability effect. It is the simultaneous embodiment of celebration and suppression. Suppressed are the logistics of execution (specifications, particularities, histories, developments) and celebrated are the highly potent and entirely false imaging foregrounding inclusivity, access, and imaging of making rather than the act itself meant to capture the imaginations of the few rather than many.

Understanding the realities of today’s culture – engagement in the digital sphere, the proliferation of imaging as the basis for how we market ourselves and our practices, how does one cut across the speed of expansion and contraction towards a new model of detailing beyond the representational (literal and figurative) towards an oppositional force, as the whole becomes to expand the detail contracts and vice versa?

Utilizing the literary examples of Ben Lerner and the artwork of Robert Irwin, this papers challenges the architectural detail in education as the point of collapse and expansion to center discourse of design and tectonics around rather than through.

Being Versus Becoming the Core of Architecture 2

Saturday, March 30, 2019
2:30 PM-4:00 PM
Westmoreland

Moderator: David Fannon, Northeastern University
Michelle Laboy, Northeastern University
Peter H. Wiederspahn, Northeastern University

Building Biographies: Chronicling Time in Architectural Representation

Priya Jain, Texas A&M University

Architectural drawings serve a strategic purpose- they are ‘blueprints’ to facilitate a building’s construction. But what happens after construction is ‘finished’? As the building moves through time, how does it deal with documenting its change? This paper deals with the issue of representing ‘time’ architecturally-- through an analysis of historical and contemporary examples, it investigates how the life of a building is chronicled. Is there any merit in tracking and representing this change beyond its immediate value of facilitating a modification? Whether and how does the conscious and deliberate ‘drawing of time’ inform architectural practice?

Specification Species: How the Standard Shaped the Guastavino System

Jessica Garcia-Fritz, South Dakota State University

In contemporary architectural practice, drawing sets and models describe physical work placed into being. Specifications supplement the set by organizing and directing how architecture “becomes” through units of work completed by a trade. The specifications collected for one twentieth century company, the Guastavino Company, who were master builders of timbrel vaulting systems in the United States, reveal how standards issued over time impacted the company. What happens when the emergence of a categorical specification standard affects the presence of a traditional construction standard? By understanding the Guastavino system first through making and then by graphically comparing the species of specifications written for Guastavino Company projects to the emergence of standards issued by institutions like the Associated General Contractors of America (AGCA) and the Construction Specifications Institute (CSI) over time reveals how these categorical construction standards impacted the role of the company, the traditional construction system they crafted, and possibly the company’s demise in 1962.

In the late 1880’s, Rafael Guastavino brought knowledge of timbrel vaulting construction with him from Spain, where vaults had been implemented as a standard system since the fifteenth century. With hundreds of projects constructed in the United States, the company gained notoriety among architects and engineers as being the most qualified for the system. Alongside the formation of the company, emerged standards for writing specifications and the direction of work. In 1918, the AGCA solidified the role of the General Contractor as supervisor of contractors. In 1948, the establishment of the CSI led to specification standards that further supported the adjusted role of the general contractor by separating work into sixteen major divisions according to the materials, products, and the trades that stemmed from the new industrialized construction methods and equipment needed to complete complex projects.

The project presented here focuses on the Guastavino system through making as well as shifts in specification standards that affected the implementation of the system. The construction of a timbrel vault in a Building Shop course revealed the necessary tight communication between architect and master builder. The observation stemmed from the complex arrangement of small units into a structural system rather than the assembly of a system from manufactured components. This was reflected in early specifications written for the Guastavino Company, which referred to the company as a type of contractor with agreements linked directly to the architect. Three species of specifications had referred to the Guastavino Company by name in the title or body. Later specifications referred to the Guastavino Company as a “subcontractor” with agreements drawn between the general contractor and the company or the mason and the company. Ultimately, the shift in nomenclature transitioned the direction of work from the architect to the general contractor and effectively severed the transfer of knowledge between architects and the company. While the Guastavino Company did not survive the various iterations of the CSI’s specification formats or their emergent role as subcontractor, the company’s documented narrative reveals how the timed evolution of specification standards impacted the presence of the Guastavino system.

Beta-Real: The Materiality of Loss

Linda Zhang, Ryerson University
Biko Mandela Gray, Syracuse University

“Beta-Real: The Materiality of Loss” aims to expose the *Real* as the Beta-Real; *fixed* memory, *fixed* identity and *fixed* history as nothing more than traces of memories, identities and histories, each stable only for a fleeting moment. The Beta-Real names a “beta version” still in development, always already shifting, always becoming, and not yet ready for release. The Beta-Real encourages us to linger there, in the in-between: between the tangible and the intangible, between what remains and what is left behind, between what is remembered and what is forgotten, between what is cast and the mold from which it is cast.

Our design research project begins from this notion of becoming in order to transform and disrupt norm-building around collective histories, memories, and heritage, where the meaning of the supposedly authentic, solid, and fixed past begins to unravel and reveal its temporal nature. Through an elective architecture seminar, we used an iterative process of slipcasting ceramics as our methodology to explore an architecture of becoming which unsettles rather than reifying, stabilizing, or fixing reality, memories and heritage. Typically, the slipcasting process—a technique commonly used in the mass production of ceramics—is use to make multiple identical casts from the same source mold. In theory, this plaster source mold never deteriorates and an infinite number of copies can be perfectly cast from it. In reality, the mold continuously decays with each iteration, even if ever so slightly. Taking inspiration from this time-based process, we exaggerated this materiality of loss, this difference in sameness. Grappling with the contested narratives of the Erie Canal Monument in Syracuse NY, we enacted acts of deterioration on the mold over time, exploring how multiple contradictory narratives could be held in productive contradiction through time.

Cast from the same mold, each stone is the same yet different. This impossibility of reification is already embedded in the process of slipcasting. Describing the project, K Michael Hays argues, “the Jouissance of the double negative, of the slipcast…goes back to the notion that architecture is ultimately about potential and opportunity, not about fixing and regulating.”[i] Unlike the word, which attempts to fix and stabilize meaning, slipcasting reveals that words (fixed meanings and stable interpretations) have already become inadequate. Hays continues: “It is the Jouissance of slipcasting and the pleasure—the painful pleasure—that in slipcasting you don't know what the object is. Is that the object? Or is the mold the object? Or is the CNC routed foam that made the mold, is that the object?”[ii] Confronting the limits of affirmative commemorative practice, the design research sought out remembrance without affirming, speech without words, where one remembers that remembrance is forgetting. Through this Jouissance of lack, through the materiality of loss, we explored an architectural language of becoming, of potentials and possibilities, produced through time to wrestle with our always already fleeting reality, with becoming.

[1] K. Michael Hays, “Linda Zhang & K. Michael Hays: Beta-Real: The Materiality of Loss," Gallery Talk, Syracuse University School of Architecture, Slocum Hall, 3 May 2018.
[2] Ibid.

Building Duration / El Portico de los Huespedes

Patricia Guaita, Swiss Federal Institute of Technology (EPFL)
Sony Devabhaktuni The University of Hong Kong
Raffael Baur, Swiss Federal Institute of Technology (EPFL)
David Jolly, Pontificia Universidad Católica de Valparaíso

El Portico de los Huéspedes is a pedagogical, design-research project that tests the possibility of an open-ended architecture, where duration links between past and future. It is a *work* of architecture as becoming: ‘work’ meaning the structure, rhythms and strategies of the effort, and ‘work’ as *El Portico* itself, which, in every instance, is a calling forth of what has taken place towards what could yet be.

The project began in 2014 on lands along the Pacific coast of Chile and continues at annual intervals each August. The starting point was a volume defined by Gunnar Asplund’s Woodland Chapel. This volume acted as a trace that measured the landscape and allowed us to forego formal questions; the work became instead a constructive problem of erecting and articulating the volume.

The project’s development from this beginning has not been determined by a fixed set of drawings. Instead, each year, the work begins anew when students encounter *El Portico* and the traces of time, labor, craft and thought left by those before them. Students are given a task (a plaza, walls, an enclosure, columns, a floor) that leads the project towards some additional possibility of appropriation. Working on these tasks, they draw, model and build full-scale mock-ups to test possibilities. They work in spaces nearby or, in recent years, bring drawing tables and tools under the completed roof working with the wind and winter sun.

In the first year, students defined the site and erected a structural frame on wooden piles founded into the sand. The following summer, a brick plaza tied *El Portico* into the landscape; a secondary roof structure, also built the second year, was clad the third using inexpensive wooden siding disposed in four waterproof layers. The fourth year, three wall fragments began to suggest enclosure. This past year -- the fifth -- a possibility for habitation: an inside defined by a concave wall punctured with lean windows; a locking door, a finished floor of wood and concrete and a brick plaza just outside. In intervals between each August, other teams of students led by partners in Chile intervened: a field of concrete columns cast with fabric formwork; wooden ribs and a concrete slab that formed the shell of the wing completed this past year.

The fixed nature of the tasks, rudimentary tools and the short, three-week period generate an intensity. On-site discussions of tests made in different modes and at various scales guide decisions. These decisions are also informed by the traces of the past manifest by *El Portico* as it is encountered in every moment, and by the work students know will continue in the years to come, by other hands; it is with this knowledge that the project is able to transmit an understanding of architecture that links past to future, bringing into presence the uncertain and open-ended potential of the life of a work and its fragility as a human endeavor.

Becoming Digital 2

Saturday, March 30, 2019
2:30 PM-4:00 PM
Westmoreland

Moderator: Ellie Abrons, University of Michigan
Adam Fure, University of Michigan
McLain Clutter, University of Michigan

Looking Longer: The Thickening of Time Amidst Second-Wave Digital Culture

Benjamin Smith, Tulane University

This paper responds to the session theme, *Becoming Digital*, in two ways: (1) By recognizing a cultural shift in the use of digital tools toward precise aesthetic ambitions, and (2) by analyzing a transitional body of work by the Los Angeles architect and educator, Coy Howard. The selection of Howard’s work from his 2010 exhibition at the Southern California Institute of Architecture, From Hand to Mouse, and his subsequent book from 2015, *The Thickening of Time*, demonstrate a critical moment, not only in the change in media of an architect predominantly known for his analog representational practices, but also within the context of digital image production in architecture that favors aesthetic results over techniques. The view presented observes this body of Howard’s work as one example of an intermediate case between two phases of digital production in architecture, connecting it to experimentation in digital formalisms and the drive to wield digital tools with rigorous sensibility. To do this, the paper couples an historical/interpretive research methodology with logical argumentation, relying on texts from aesthetic analysis and philosophy to situate qualitative descriptions of Howard’s work within a disciplinary context of contemporary architectural representation. Graham Harman’s philosophy of Object-Oriented Ontology and Bill Brown’s conceptualization of Thing Theory are leveraged to explore the aesthetic qualities of mystery and alterity inherent to Howard’s aesthetic goals. In an era marked by rapid image consumption through social media, the positioning of this work, which was first exhibited only two days after Instagram went live, presents an historically significant moment to question the culture of attention toward the influence of images and the relevance of digital media in exhibitions and books.

Literal Digital

Alfred Koetter, University of Southern California
Emmett Zeifman, Columbia University

In the spirit of opening the black box, to see what, if anything is inside, we thought we’d talk about how we work, particularly how we work with computers, and in so doing, to try to reflect on the ways in which computation today structures the field and the work we produce.

For us, as for the rest of the world, architects and otherwise, there is only “the digital”—the use of computational tools is ubiquitous, and no longer in and of itself represents a genre, niche or avant-garde approach.[1] With respect to the world, we are on the Gen-X cusp of millennial, and so we remember a childhood without the internet, and an adolescence without smartphones. But we are young enough that computers did not in any way consciously transform or upend our lives. They simply happened, slowly at first, and then all at once, without anyone our age missing a beat (or losing a job). Some people took them more seriously than others, became “computer” people, but we all took to them “naturally.” And as far as our architectural education and training goes, we are “digital natives.”[2] Our use of digital software to produce architecture has never been exceptional or even optional; it has always been a given and a requirement. Though we are (just barely) old enough to have been taught to draw by hand in anachronistic introductory courses, we entered an already “digital” discipline, in which the standard suite of tools that we were introduced to and expected to use as students remain those which we use today (namely, AutoCAD, Rhino, Illustrator, Photoshop). More specifically, we entered the discipline at a moment when Rhino became firmly entrenched as the primary modeling software, missing the heyday of Maya and formZ before it, and sidestepping the emergence of Grasshopper and Revit (the latter because we left corporate office jobs before we could be properly trained to participate in the architectural workforce of the future). We are perhaps particularly characteristic of the present state of the “digital,” in the sense that our skill set represents the minimum required to engage in the discipline and in small-scale professional work, and no more—we occupy a digital plateau. We’re not early adopters or late bloomers or reactionaries or revolutionaries. As the name of our practice suggests, we’re medium, somewhere near the average in both our digital skills and digital ambitions, which are not measured in computational power, complex geometries or patterns, ever-new plugins or scripts, and other measures of digital expertise or exceptionalism.

[1] For more on these distinctions, see Matthew Allen, “Computational Labor, Computational Aesthetics,” *Project* 7 (Summer 2018).
[2] A term popularized by Marc Pensky, “Digital Immigrants, Digital Natives,” *On the Horizon*, Vol 9. No. 5 (October 2001)

Delirious Facade

Wei-Han Vivian Lee, University of Toronto
James Macgillivray, University of Toronto

This paper looks at a recent developments in digital knowledge and design towards what the authors call “raster” based surfaces and away from “vector” lineaments. The authors present this turn in relation to the historical context of facade composition, drawing an analogy between the beaux-arts understanding of facades as a consequence of plan and section and the auditable and verifiable scripts of parametric design. In contrast to the vector, the authors present contemporary developments in machine learning and perception that privilege an interaction with the world based on surfaces and pixels. Lastly they present the potential for the raster digital as a design tool, using artificial intelligence to synthesize hybrid facade designs in a digital dream state.

None More Digital

Courtney Coffman, Princeton University

When considering the current climate of mass media and infinite scrolls, there seems to be a chromatic wave rippling through our feeds. Amid the over saturation of circulating images, three key colors appear to be trending in architectural representation. This research is a speculative attempt to frame a current moment in the complex overlap of digital data and physical matter—“from screen to stone”—through the lens of three colors: pink, blue, and black.

There is a codification in the deployment of these three colors; they are organized into a spectrum of both chromatic value and cultural influence. A soft pink speaks to the politics of taste, a humanist perspective, whereas black introduces a post-humanist future, favoring the mysterious object in its unintelligible depth; a bold blue sits between these binaries as the hue of the technological and the Anthropocene.

Most often viewed through our handheld devices, these colors may seem like a superficial subject of a (con)temporary condition, but much like form making and drawing techniques, color also defines aesthetic movements. From the Baroque to the Bauhaus, every zeitgeist carries a new color scheme based on material resources, economies, and culture. Given the rise of new tools and methods of production, it may be time to once again re-evaluate color in design; in this case, color is technical rather than compositional.

This research explores the status of color in digital, architectural design today; do designers actually care about the specificity of color or are palette choices determined by digital tools, gradient sliders, and #filters?