

Drawing for the Design Imaginary

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Drawing has long held a robust and central position within the discipline of architecture, serving as an investigative device to glance into the future, a discursive tool to convey meaning, and a notational convention to facilitate the translation of design intent into built reality.

A survey of the past decade reveals voluminous discourse, and occasional anxiety, surrounding the subject, protocols, and future of drawing as an instrument in the profession and the academy. While the operative and representational basis of drawing retain prominent positions within the discipline of architecture, the increased reliance upon simulation and information modeling are reshaping how one designs, thinks abstractly, stimulates potential, and communicates. Furthermore, the universality of the live virtual model coupled with a growing arsenal of digital techniques has blurred distinctions between image and drawing to sponsor an expanding field of possibilities while challenging the language of architectural representation.

Throughout these shifts, drawing has revealed a remarkable durability. If as Mario Carpo states, “drawings probe and test the limits and constraints of architectural representation itself”, then perhaps drawing is ideally situated in our post-digital circumstance.

Building upon the 2019 ACSA conference's theme on the current state of architecture's core, this exhibition explores the role of drawing as pedagogical instrument. Broad in scope, technique and medium and including drawings by students of architecture, instructors of architecture, and practicing architects, it opens inquiry on the role of drawing for the design imaginary and as a scaffold for design thinking and pedagogy.

Curators:

Jeremy Ficca, Carnegie Mellon
Amy Kulper, RISD
Grace La, Harvard GSD

Graphic, Line, Object (G.L.O.)



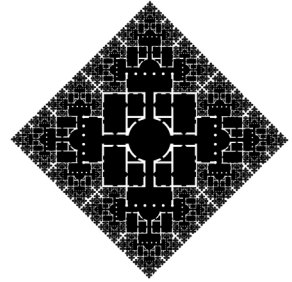
Graphic, Line, Object is a “drawn model.” What is submitted for this ACSA call is a photographic image of that drawn model. Drawn specifically for an invited exhibition at the request of the curator for a “computational image” it was assumed that the other works would primarily consist of two-dimensional printed drawings or renderings. Interested in challenging the notion of image through the design and fabrication of drawn objects G.L.O. emerged as a representational study that conflates image and object. Pedagogically, G.L.O. rethinks Robin Evan’s iconic arrested image diagram by shuffling the relationships between the observer, the designed object (the thing being transcribed to a projection plane—in this case a standard wall plaque) and the perspective view of that object being recorded, ultimately negating the role of orthographic projection.

A virtual reality drawing environment, an immersive form of the conventional projection plane that expands the two-dimensional to three, was employed with varying degrees of quality control. On the low end of the control spectrum virtual reality, as a medium, reintroduced gestural characteristics long associated with analog drawing but often disassociated from digital drawing which tends to embrace ultimate precision. In this drawing world lines are imbued with surface, mass, and volume and even texture. Line “weight” is a term that now bears physical and material qualities moving beyond a directional Cartesian grid towards an in-the-round cloud of points.

Point of view, scale, and perspective projection as opposed to orthographic are all experienced in a zero-gravity drawing sequence that allows us to immerse ourselves in the drawing in real time, cueing a range of precision, tolerance and line qualities mid-stroke. The source object was “drawn” from above, around and even within itself in an effort to expand the canvas beyond the traditional screen and to challenge the conventional use of VR as a mere viewing device and instead find agency in it as a design and drawing tool. Ultimately, G.L.O. prompts us to consider the performative act of drawing, an in-situ recording of an object in space, rehearsed differently each time.

Another Villa

We're exhausted, digitally, at least. The computer makes some things easier, but even with all our new toys, architecture still requires the same monotony. Still.



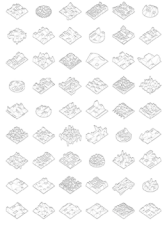
Copy, paste, scale, repeat. Copy, paste, scale, repeat. Once a protagonist, the computer now sits in the background, emitting a slight hum.

Code is a lens we use to view the world. When we're bored, we revisit old things and enliven them with code. It gives us new perspectives. Dumb algorithms applied to old drawings offer something completely new. We were curious to see at what point the Villa Rotunda could lose meaning, so we elaborated its embedded recursion. Form follows function(s). An empty architecture calling to itself. The architecture of the subroutine. At what point would it lose singularity? Could it lose scale?

We made this drawing with a custom script. (No, we didn't.) We could have done it "by hand" in Illustrator. Does it matter? We made hundreds of other studies. (No, we didn't.) If it was harder to do, would you like it more? We are interested in making things dumber. After all, maybe architecture can be easy. We know. It's too easy, too clever, too reductive. But we still love it. And we made you look.

Roof Studies

Type Variant commissioned as wedding chapel and event space, the plan needed to be unbroken and hyper-flexible for a variety of configurations. The building is sectionally layered by function: a lower level with loading docks, service spaces, kitchens and bathrooms; and an open upper level: column-free and variably configurable. The perimeter walls retract to connect to the surrounding landscape, leaving the architecture to the roof. The building thus develops as a topographic ceiling: an array of skylights that create a variable funnel field connecting the celestial landscape through their calibrated funnel frames. Breaking down the large 100'x100' space, the anthropomorphic scale of the individual units, similar yet individuated and unique, reflects the functions of use: a large crowd of individuals gathered densely in common celebration. The collective of the field is articulated through the variability of its system. The whole is determined by the part. Displayed are studies for the roof configuration.



AFTERL/VES

"Buildings, like humans, are the products of their generation and their location. Buildings are inevitably formed by both a place and a history. They are brought into existence, they have a youth, a maturity, a senility, a death. Buildings are not fixed things; they change, they grow, they get sick, they die, or more commonly, they are murdered."

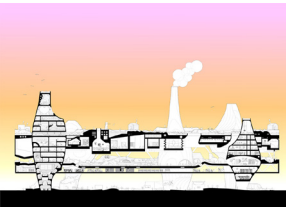
Annabel J. Wharton

The Tribune Tower: Spolia as Despoliation

According to the EPA, nearly 500 million tons of construction and demolition debris is produced annually in the United States. As designers, it's our responsibility to critically question how the resources we build with are spec'd, sourced, transported, constructed, maintained, demolished and discarded. AFTERL/VES is an ongoing drawing series that explores ideas about alternative approaches to our all too familiar irresponsible building practices. These drawings reference a wide range of design approaches as they relate to the central theme of material AFTERL/VES, including Adhocism, Arte Povera, Bricolage, Dadism, Land Art, Regionalism and Spolia. These drawings lead to physical material specimens that test ideas about mass, materiality, effect and spectacle in the design of our built environment as it relates to the careful consideration of temporality and waste. The ambition is that by exploring resourceful design ideas and movements via this process, these drawings and their related 3-dimensional explorations will inspire us to rethink and repurpose existing resources instead of tapping into new ones, to defamiliarize and decontextualize artifacts of the recent past in search of finding new and useful applications for the obsolete materials and architectures that surround us.



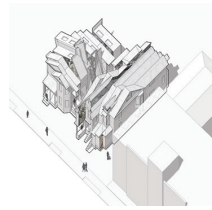
Museum is More



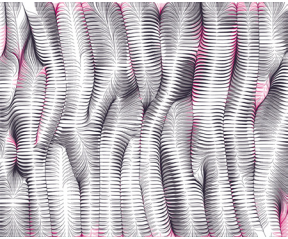
More than a container of archives and exhibitions of art, museums today perform complex social functions beyond their job description as neutral buildings. Our proposal for the Helsinki Guggenheim Museum is based on these broader questions about what the museum is today, and what more it can be. Comprised of five primary horizontal layers and six vertical figures, Museum is More presents a stacked diagram of alternating programs, sandwiching an elevated public landscape between two thick layers of museum functions. The six vertical figures each perform a collateral function – restaurant, café, bar, hotel, shopping, and academy. Here, casual visitors are still able to access the museum without attending the galleries. These figures touch the ground to lead visitors into the building. They extend their day-to-day use into the urban fabric, folding the museum into the citizen's daily routines. As a symbol, a space and an idea, the museum performs as a graphic symbol of the city. It is a place to be remembered by its visitors and to inspire artists that strive to add to its collections. On a cultural level, the museum is a stage on which taste-makers and eccentric characters orient the creative flow of the world. On a social level, the museum provides moments of intimacy and exhibitionism. A place to see and be seen; to consume and to produce. It is a place where rules are set and broken over the fine line between the conventional institution and the avant-garde. The museum is More does not simply collect and exhibit art; it projects the future of how people collect and exhibit art. The museum is a container for a collection of collections, both in terms of its patrons and the work it houses. Moreover, the museum extends itself to communicate its own language by which we understand the cultural history of every art piece and artist within its walls. The museum is More is a social platform for both domestic and international strangers - all lovers of culture, coffee, and conversation.

3D Turntables

3D Turntables is a design experiment focused on the relationship between the hip-hop DJ and contemporary fabrication technology. The study merges the DJ's innovative spirit with contemporary architectural tools to develop new form-generation techniques. Tests by Syracuse Architecture students in an elective seminar, beginning with laser cutters, 3D printers, and CNC mills, informed Cooke's own studies focusing primarily on distortions produced by disrupting the 3D printing process. By scratching, spinning, and cross-fading the printed objects, the digital inputs into the printer become improvised, manually manipulated, analog outputs. These techniques, once tested on primitive geometries and organized into a matrix of possibilities, are then applied to scaled models of houses. The resulting proposal imagines a new process of performative deconstruction for buildings slated for demolition in Southside Syracuse, transforming derelict structures into temporary community assets. Design assistant: Sabrina Reyes



Uncertainty of Flow Duration



Architecture is fundamentally a part of a larger planetary ecology. Flow Duration is a lenticular print based in 3D flow simulation that seeks to engage the issue of ecological attunement beyond the environmentalist paradigm. This drawing questions the implication of GIS data as a singular decision-making tool for the visualization of urban conditions. It promotes a shift away from the data-driven rationales and the desire is to tap into sensorial subjectivities as part of the aesthetic and ecological experience.

Computation is typically a prompt to the illusion of determinacy. Flow Duration drawing spatializes time based effect of topographical flow to uncover indeterminate expression of a computational code, while spatializing the viewer. The use of lenticular printing allows for removing a singular point of view to perceive the drawing, so that the underlying information become ambiguous, overwritten by the expression of drawing's multiplicity. The flow lines in the drawing are color-coded according to the simulation sequence and numerical value of each flow curve. Thus beyond just information, the drawing creates its own aesthetics of informational uncertainty. Its focus is on the creative translation of large-scale urban data in the effort to produce an object that negotiates between usefulness and creative play, ultimately questioning how geospatial information can affect design thinking and probe new design sensibilities within urban scale behavior. This exploration hopes to precipitate a discursive agenda between the autonomous character of physical artifacts and the relational setup of socio-ecological landscapes while shifting the focus of design away from objective 'truth' of contextual data to the constraints of human (mis)perception and spatial aesthetics. The hope is to unsettle the kind of pragmatism which has emerged in the era of big data regarding the use of GIS as a singular decision-making tool for the visualization of urban conditions.

Schematic Section - Museum of Oblivion Memory

Memory and oblivion provide an essential analytical view of human vicissitudes marked by changes and searches, but also by stalking of forgetfulness. The Museum of Oblivion memory emerges from a shift from conventional museum ideologies. This museum redefines musing functions in and for communities not simply by changing its narratives, but by renegotiating the processes of narration and codes of communication with the public. This Museum features/deploys architectural strategies to invite emotional responses from visitors: to evoke memories via both mind and matter; and to obliterate residues or remnants of traumatic histories or other agonizing incidents from distant pasts. While recall is essential, we ought not to make memory an absolute deity. Forgetting is essential to action of any kind; arguably, it is possible to live happily almost without memory; moreover, as Friedrich Nietzsche claimed, it is altogether impossible to live at all without forgetting. Nietzsche's notion of "active forgetting" is employed to better understand the disruptive and destructive influence of collective trauma on cultural identity and collective memory. How do the processes of remembering and forgetting shape individual and collective identities? Schematic Section -Mixed media- proposal for a Public Musing Institution.



Jessica D'Toste
Lisa Landrum, Ted Landrum, Instructors
University of Manitoba

Measured Drawings of the Sculpted Air

The visual result was quantitatively produced, embedded in the aesthetics of raster images; a pursuit of the disappearance of drawing methods.

In order to extract forms of sculpted airflow generated by a robotic thermal device, a series of superimposed frames were produced following a comprehensive process. These drawings, appearing to be hand renderings with charcoal, are in fact computed pixels defined by 2D coordinates on the digital screen. Originally captured by a video camera on a Schlieren Optics setup, forms of airflow- constantly transforming- were produced through scripted movements and temperature fluctuations. In order to subtract the background from these forms in a large amount of footages so as to conduct analytical comparisons, frame differencing technique was implemented during the drawing process. As computer sees changes in pixel intensities between two selected video frames, newly defined values are assigned to the output so that the dynamic is differentiated from the static. Each frame within the superimposed imagery in this case, is actually a measure of motion within a certain swift moment- the duration of which is defined by parameters in the customized script. The visual result was quantitatively produced embedded in the aesthetics of raster images; a pursuit of the disappearance of drawing methods.



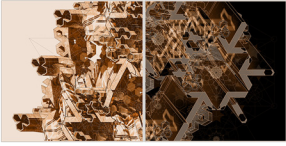
Cafe Fargo Use Studies

These six illustrations use drawing as a way to study how various, different uses might play-out in a renovated interior. Because the interior is designed around seasonal change and not around use, the intention is that the space could be taken-over by different users without the need for much alteration or demolition. The illustrations put equal emphasis on the formal, built elements and the informal, changeable elements.



Davidson Ratailidas
Stephanie Davidson, Georg Ratailidas

Patterns, Projections, Sections



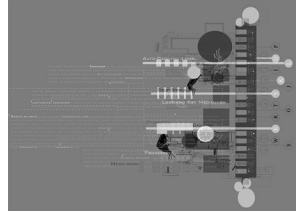
Drawings shown were created as examples for a second year undergraduate visual-studies course. In the course, students were asked investigate the role of drawing in architectural design at this 'post-digital' moment. They were asked to consider three roles for drawing in architecture. First, descriptive: done after things (objects, bodies, buildings, cities, etc.) existing in the world, for example a hand-drawn sketch of an existing building or measured construction of geometry. Second, analytical: intellectual endeavors attempting to come to a detailed understanding or interpretation of an existing construct, for example an exploded isometric showing how building systems work together or a site analysis diagram showing various forces at play on a site. And third, speculative: attempts to bring something that does not yet exist into being, a type of drawing where rules (disciplinary or not) interact with the author's imagination to produce something novel.

In creating their own drawings, students were asked to focus internally toward project development and authorship rather than on producing externally oriented imagery. They were asked to make drawings they considered design instruments as opposed to making drawings they considered descriptive of a project or a concept. At the same time, in order to allow speculative drawings to simultaneously work descriptively and analytically, a series of topics related to disciplinary conventions were introduced to the exercises they did. These included use of geometric patterning, regulating grids, sectioning and projection.

Techniques historically used by architects have been multiplied computationally in an attempt to produce a novel aesthetic. These drawings are meant to guide and frame questions about what architecture could potentially be, both formally and aesthetically. But on the other hand, these drawings are nothing more than what they appear to be.

Cipher Loop

The Book Container: Vaults vs. Memorials - The construction of spatial narratives in an architectural project invites us to widen our field of comprehension by correlating ecology and experience in visual expression. An assigned text, Manuel De Landa's *A Thousand Years of Nonlinear History*, plays an interlocutory role by shaping and mediating the broader theme of media library and the preservation of books or their physical demise. Can a book speak about its vault or memorialization? How can the vault or memorial condition the meaning of the text? Can the architecture of the vault or memorial be read as a text? For students, this framework sets up a design inquiry entailing familiar but seemingly opposed realities; memorializing the text or preserving it in a vault remain in perpetual conflict. The approach is interactive, an impetus for restructuring specified spheres according to new schemas; vaults versus memorials establishes a basis for new meaning contingent upon the reconciliation of those spheres and, therefore, resists allocation to one sphere or another. The act of drawing enables the student to replace categorical, static thought with fluid, synthetic thought. Hence, the meaning that one gleans might best be understood as ever expanding in richness and depth as opposed to being static or fixed. The drawing produces its own frame of reference for the student: the precondition of assessing the necessity of a media library in the first place emerges. If the book becomes obsolete, what is there to act as a witness of historical action? Something that cannot burn may be destroyed easily, silently, cybernetically. From our appreciation of craftsmanship of a written and bound text to the repercussions of this (technological, social, political) evolution, the integration of subject and object aims to engender the tension and impetus for creative work that at its best aims at social critique.



Melanie De Jesus
John Sandell, Emmanouil Vermissou, Instructors
Florida Atlantic University

Vestige



Colleen De Matta, Zheng Tang, Christopher Perez
Peter Goche, Instructor, Iowa State University

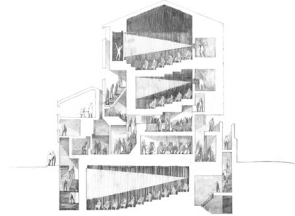
We seek to navigate various material and immaterial mediums with broken pencil and thereby provoke a capacity to speculate on an architectural potential by experimental drawing and sentient-based labor. The act of drawing today has been numbed down to encapsulate only that which is profitable, rather than something which is provocative and meaningful. Much of the methodology currently engaged within architecture deals primarily with the digital medium, never seeking creative processes that test the limits of architectural space and notions of what architecture means to the human spirit. Throughout our own intensive practice, we have taken the stance that drawing in present terms lies in an in-between state, allowing the body to utilize both digital and analogue methods in order to not only push the definition of drawing further, but the very notion of architecture itself. We have begun to define a drawing, as well as the practice of drawing, as a methodology through which we allow ourselves the generative capacities to produce a variety of creative sequences that are specific to the very truth we sought. This lends itself as an escape from the current disciplinary tendencies toward an architecture of mere appearance and form and return to a method of drawing out truth. In other words, our practice of drawings sees itself as a veracity finding apparatus that can be utilized in order to gain meaning into the potential of architecture. Similar as to how Alberto Perez-Gomez defined the act of architecture in the seventeenth century as having the “prime objective, to relocate man as an active participant” within architecture, we seek to convey ways the human spirit can become enlightened through both the spaces our drawings produce and the process of drawing itself. In order to achieve this, we pushed our methodology further and explored it as a means of learning and began with material explorations that allowed us to investigate the spatial and textural effects of deterioration on material and immaterial constructs. Drawing, thus, is an emancipatory act which allows one to procure not only spaces which are creative, but also meaningful through its phenomenological milieu.

Solas Picture Palace

The pencil on tracing paper section was drawn, scale 1:50 in September 2012 for a proposed cinema in the west of Ireland. Recently completed, the building is situated in the centre of Galway at the edge of the old town between the river and the docks.

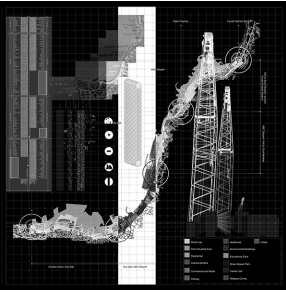
Made for the client for atmosphere, it shows the facade of the original house kept for streetscape and office space as the concrete monolith pinches the foyer between, the box office as corner shop in its garden, now a plinth and ramp for flood defence with a glass framed dining room under a bar of forced perspectives between untempered stairhalls between stacked black boxes. These rooms are lined in red fabric, in the top hung in the round, in the middle draped for layer and in the bottom slung, for theatre and economy.

The drawing attempts to render the space darken toward the cinemas, brighter to the edges within the silhouette of a house.



Alternative Infrastructures: A Transportation Imaginary

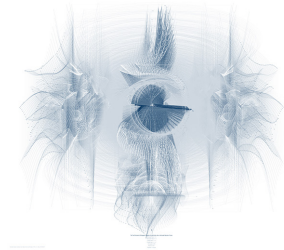
Today, a vivid resurgence of drawing as a thinking tool and a complex medium of expression is occurring within the academic sphere and in turn affecting practice. The return to the conceptual and complex drawing as a medium for creative exploration comes in opposition to the banality of the realistic render and the abandoned digitalization of the design process. Drawing, an essential architecture medium, is being reconsidered today as architecture's fundamental output, recognized not only as a representation tool but more essentially as an experimental tool that conveys thought, process, desires, and sensibility. As a complex milieu, this revived form of drawing enables the intersection of the digital with the analog, the contemporary skillset with the creative mind, helping retrieve its lost role as a conveyer of thought and meaning. It is once again the means by which we are able to imagine alternate possibilities, rendering visual the complexity of ideas that intersect within our minds. Within the format of a course that crosses experimental representation with infrastructural speculation, the drawing presented here expresses the vision of a group of students for an alternative form of imaginary infrastructure. Deeply frustrated by the lack of any governmental planning for a highly congested highway leading to Beirut's northern entrance, the students propose an extreme reaction to the daily mundaneness of traffic, developing through mappings and explorative drawings their vision in a single cumulative construct. The project, titled Consumed(ism), suggests an alternate possible future for a highway already burdened by consumerism, with commercial activities aligning its edges and random street vendors meandering between the cars. The students imagine a highway further exaggerated with more elaborate consumerist schemes integrated with a continuous conveyor belt system. The drawing expresses an overlay of commerce mapping along the highway strip, and an elaboration on the conveyor belt structure that allows traversing the highway via a flowing shopping experience. A site plan overlaid on the sheet contextualizes the design, with a focused hierarchy for the conveyer system and a series of watchtowers that interject the new highway, allowing continuous control and reconfiguration of the daily consumerist experience.



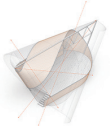
Mario El Khoury, Mia Dibe, Reem Nassour
Carla Aramouny, Instructor American University of Beirut

The Two Dimensional Orthographic Projection of a Semicircle onto an Interrupted Epicycle of Cone

This drawing is part of series that interrogates the orthographic drawing techniques of Guarino Guarini (1624-1683) set out in his posthumous treatise, *Architettura civile*, (1737). While some of the drawings from the series deal with the direct documentation of his orthographic drawings, this particular drawing translates his written and drawn instructions in the programming language of Python in the open-source platform of Processing.py. The objective of drawing and the research in general, is to use historically and seemingly defunct modes of architectural drawing to reimagine digital tools. The drawing process is derived from Guarini's technique for translating the geometry of three-dimensional vaults into two-dimensional stone cutting templates. An example of this can be found in Tractate 4, Lastra 4, Figures 4-5. Guarini provides the method for developing a vault from the projection of a semicircle onto an oblique plane and a cone. For the cone, Guarini reminds the reader that the section of a cone parallel to its base is a circle. He then measures the radius of each circular section in top view of the projection. These radii are used to plot the curve of the distorted semicircle in front view. The distances found in front view are then used to unroll the vault onto a flat plane. In an analogous manner, *Onto an Epicycle of Cones* begins with the projection of semi-circle onto the vertical section of a cone at its axis, a triangle. The circular or elliptical conic sections at each point of intersection with the triangle are measured and then used to locate the projection of the same intersections in top view. Variation and motion are then introduced to the drawing by two means. The first introduces variation by changing the radius of the semicircle and the orientation and size of the cone over time. The second uses the defunct model of planetary motion, the epicycle, to displace the top view projection over time in three related epicycles rotating at varying rates. The process is nearly identical to Guarini's except that in lieu of single cone, there are many.



Geodesic Pavilion: Geometric Construction, Geodesic Strip Flat-to-Form Wrapping Sequence



Geodesic Pavilion employs well-established flat-to-form geometric techniques of developable surfaces to produce a cocoon-like stage, exhibiting a progressive design achievable via conventional construction methods. The crisp linear aesthetic of the angular truss and its oblique supports serve as the formal counterpoint to the curvilinear skin.

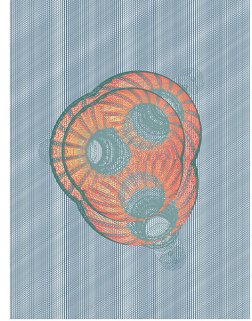
In Differential Geometry, developable surfaces are defined as those with zero Gaussian curvature which can be unrolled to a plane without distortion. The advent of complex forms in contemporary architecture has necessitated the use of developable patches to post-rationalize surfaces of double curvature for economy and constructability. In other words, they are the unavoidable means to approximate and construct geometrically undisciplined architectural form.

In lieu of such remedial measures, these developable forms serve as the a priori idioms of a new spatial and tectonic language. Unlikely to be combined in arbitrary ways, these surfaces require specific knowledge of their curvature and isometry for successful deployment. The productive resistance they offer leads to recurring geometric grammars and legible syntaxes, bringing their spatial virtues into a discursive frame.

Geodesic Pavilion uses cones, cylinders, and planes trimmed along their (straight) ruling lines. These fragments are stitched tangent to one another to define a spatial enclosure with a smooth and continuous surface. Geodesic curves drawn on the surface subdivide it into “geodesic planks” which become contiguous rectangular strips when unrolled to a plane. Specifically, this form uses the technique of “geodesic leveling”, which allows the grain of subdivision to transition from horizontal to sloped, and back to horizontal. The amount that any geodesic line will deviate from level to inclined across the surface of a cone or cylinder is a function of its profile angle, radius, and angular sweep. This direct isometric relationship between two-dimensional flatness and full-bodied three dimensional form allows conventional lumber, plastic, or other flat stock to produce various families of smooth and piecewise continuous form.

Parallax Gap, 2D Image Composite

The individual drawings are pulled apart onto multiple layers; fractured and allowed to merge into other, possible architectures.



Parallax Gap draws out a series of ceilings that project beyond the limits of the gallery, curating stylistically eclectic examples of American architecture loosely contemporaneous with the construction of the Renwick Gallery building, the site of the installation, in the late 19th Century. This assemblage is a catalog of notable American architectural styles rendered through 21st century technology and visual culture.

The nine ceilings in the installation are each drawn in perspective from several eccentric viewpoints, creating a series of distinct vantage points to be encountered as one moves through the gallery and zones between where the drawings collide and cohere. The individual drawings are pulled apart onto multiple layers; fractured and allowed to merge into other, possible architectures.

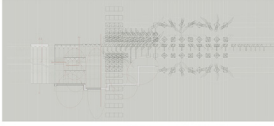
This drawing, 2D Image Composite 2, of a box kite done for the Possible Mediums Exhibition at Ohio State University in 2014 document the complex 3-dimensional order of the kite's intricately stacked volumes. Two images of Marilyn Minter's highly decorated eyes are projected through the cells of the kite, producing points of figural legibility read against the geometry

Dismantling the Wall Section

Unlike traditional construction drawings, this illustration seeks to radicalize the representation of the architectural detail. In addition to structural assembly, this drawing explains the conceptual formation and geometric construction of the building as a whole. It combines a technical elevation and wall section with an exploded rotating orthographic, side view, plan, reflected ceiling plan, of a pre-cast modular column and sky-lighting system, showing the geometric formation and relationships of all the building's elements.

This Drawing is part of a Studio Work produced by Students Claire Hicks and Wilson Marshall and Faculty Henrique Houayek, Luca Rocco and Danilo Vespier as part of the Clemson University, Genoa Study Abroad Architecture Program.

Claire Hicks, Wilson Marshall
Henrique Houayek, Luca Rocco, Danilo Vespier, Instructors

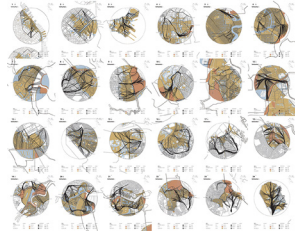


Waterfront Ecologies: Composite Site Drawing

How do we design for a site context that is continually changing? This is a challenge posed by urban waterfronts in tidal cities that must respond to a changing shoreline with increasing threats of sea level rise, seasonal flooding, and extreme weather events related to climate change. “Waterfront Ecologies” seeks to re-envision the urban waterfront in 24 sites around the San Francisco Bay, creating a new set of relationships between urban life and ecology. This project proposes a managed retreat and resilient redevelopment that accommodates sea level rise and tidal ecologies along a soft, porous, and adaptable urban edge between water and land, enabling cohabitation of the built and natural environment.

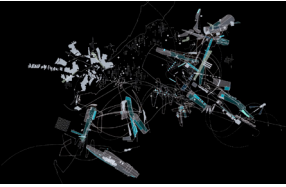
Traditional design methodologies of the built environment are not equipped for urban and ecological conditions in continuous transformation. “Waterfront Ecologies” utilizes a process that directly collaborates with site-specific characteristics of the built environment past, present, and future. Each composite site map illustrates the outcome of integrating GIS data with a parametric design process. This involved the creation of an “agent-based” suitability model simulating sea-level rise, wetland growth patterns, and infrastructural nodes. The resulting agent paths represent the most suitable location for redevelopment to coexist alongside tidal wetlands and connect with existing urban infrastructure.

The “Composite Site Drawing” represents the project stage between site analysis and design intent. The representation technique foregrounds analysis and mapping of the 24 sites, portraying them as central characters in the design process. Each panel contains a layered map of site conditions past, present, and future, including an assessment of the population at risk, marshlands, land use, sea level rise, levees, staged retreat, and the agent-based path generated from the site factors, which serves to inform an approach for resilient redevelopment. These drawings serve as an example of a process that I utilize in my pedagogical approach to site informed design.



Black Box

a line is put into action as another one is overdrawn, and fades away: a new storyline emerges



Diving into the cosmos of crossing lines, the act of drawing sets out to record passages through space and time to construct place, pathways that form a journey in which a site is constructed. Snapshots are taken, negotiations are conducted, measurements may turn into facts, material surfaces, and connections are being discovered, a line is put into action as another one is overdrawn, and fades away: a new storyline emerges. In a vortex of silence, life on site turns inside out as rays from an inner cosmos begin to transmit into the uncharted, to form yet another world to be discovered.

As no impositions or intentions are projected, Black Box in this light reflects on the ongoing conversation around the intricate process of experiencing the object and subject as an intertwined reality through which the line between self and other is erased. Through this lens, the act of creation becomes an inclusive process of world making in which self is as much imbedded in the other as the object is imbedded in the subject.

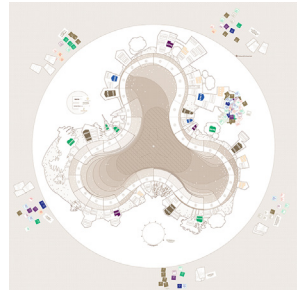
Barertown: A Game of Social Resilience

Barertown imagines a world without money to test how social networks can be reshaped by an economy of favors and resource-sharing in the face of sea level rise. Players conduct activities throughout Barertown while adapting to chance events like floods, fires, or even a new romance. To do this, players might negotiate for, say, a couch to sleep on, or to invest collectively in flood-protection infrastructures.

(Selected) Rules: - The first player to complete all of their Activity Tiles wins. - There are 3-5 players who are residents of Barertown. - Each player can only sleep at Home. - To travel, roll the dice and move your Player Token any number of times not to exceed the roll of the dice. - If 2 or more Player Tokens meet up and have matching Activity Tiles, they can play both tiles at the same time and any additional tile of any appropriate color. - Bartering: You can let other players stay in your Home at any time, and exchange Activity Tiles if you meet up. All exchanges are negotiable, for example, if I babysit for you, you might fix my car. - In a permanent flood, players cannot move through or conduct activities in a flood zone. All activity pieces in the flood zone are returned to players and completed again. - Every other round, players discuss how they would like to use Infrastructure Tiles.

By designing interactions among players, objectives and resources, this game models the social justice implications of innovative financial and legal strategies. Equally important, it models the space of cities, offering unique ideas about the built environment in direct relationship to such dynamics. Together, these two interpretations of a 'model' serve as a new kind of decision-making tool in a risk society, a tool that imagines new relationships among economies, publics and architectural design.

(This game was created for the Bay Conservation and Development Commission by Janette Kim, faculty/director of Urban Works Agency at CCA; and is part of a series of climate change board games called "Win-Win" created and played by students).



Pollution Outflows

Environment Form Feedback is a core design studio that negotiates building forms and their organization within its urban and ecological landscape.



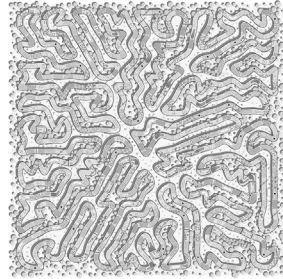
Ecology posits that all entities have thermodynamic relationships to one another and are bound together in complex systems of energy and information exchange. By engaging environmental patterns and identifying micro-climatic behaviors such as water and waste system flows in early design stages, we move towards the design of discrete city forms and architectural interventions that translate across scales to give new shape to the contemporary city edge. As the land becomes over-populated and susceptible to climatic fluctuations of extreme weather, we propose a network of water settlements rooted in overflow of pollution.

Not tied to ownership of land, or territory of urban rights, this drawing promotes shared forms of habitation based on negotiation of collective social logic implied by environmental urgency of waste and water-flow patterns. Working at a flooded river's edge, we extracted environmental data of Pittsburgh's Strip District site with overlay of the underground combined sewage network within to identify convergences of storm-water overflow. Out of these pollution outflows we designed a network of bioswales for water filtration. The filtered water is extracted underground through the infrastructural coils that vertically transform into a collective housing scheme, while using gravity as a basic force for water distribution and filtration. The Pollution Outflows drawing identifies the points of conflict and intensities out of which a new design proposal emerges.

The Walled City (10-Mile Version)

This is a drawing of a wall that consumed a city. Folding and inflating, the wall took over the entire area and program of the city. The traditional definition of a wall (something that divides), is inverted into something that unifies while confusing any notion of sidedness.

The entire drawing process was automated and this is the pseudocode: 1. On a site of any size, create a closed wall at the site edge. 2. Gradually increase the perimeter of the wall while making sure the wall never intersects itself or the site edge. 3. Continue increasing the wall perimeter until all available land within the site is full. Increase the wall thickness by some amount so that it can contain program. 4. Divide the wall into smaller sections. 5. Go to www.google.com and in the search box enter the word "rooftop" followed by a space and each letter of the alphabet. From the list of four autocompleted suggestions for each phrase, choose one phrase that suggests a possible program for the Walled City and record it. If typing only one letter after "rooftop" does not produce any interesting suggestions, type an additional letter starting from letter "a" and iterate through the alphabet again until a better suggestion appears. For this iteration of the Walled City, the following program suggestions were used: Rooftop Antenna, Rooftop Bar, Rooftop Cafe, Rooftop Deck, Rooftop Exhaust, Rooftop Film, Rooftop Garden, Rooftop Hotel Pool, Rooftop Ice Skating Rink, Rooftop Jacuzzi, Rooftop Kitchen, Rooftop Lounge, Rooftop Market, Rooftop Nightclub, Rooftop Observatory, Rooftop Park, Rooftop Quad, Rooftop Restaurant, Rooftop Solar Panels, Rooftop Terrace, Rooftop Unit HVAC, Rooftop View, Rooftop Wind Turbine, Rooftop Xmas Tree, Rooftop Yoga, Rooftop Zen Garden 6. Randomly sort the wall subdivisions into 26 groups. 7. Populate each group of wall subdivisions with one of the rooftop programs. 8. Populate the area outside of the wall with various landscape features and the area inside the wall with various urban street furniture. 9. Connect the rooftop with the land inside the wall with stairs.



Inventory



Inventory is a speculative proposal for an opportunist intervention that operates within the constraints of existing construction and demolition waste streams to translate the spatial voids and material surplus of the demolition site into a temporary ruin-scape through aggregation. Part civic archive, part stockyard, the project explores the aesthetic and economic implications of stockpiling to generate strategies for a provisional architecture that unpacks the relationship between physical inventory systems (piling, stacking, baling, etc.) and the archiving and preservation practices of established cultural institutions. Within the sequence of an architectural drawing set, the demolition plan operates as a prelude to the project, a document of obsolescence that sets the scene for future work. In this subsidiary role, it fails to capture the carefully choreographed network of material transactions and labor systems that constitute the circadian rhythms of an active job site. In attempt to reveal the process of unbuilding as an end in itself, a series of digitally reconstructed mises en scene re-stage the collecting, sorting, storage and circulation patterns of salvage accumulation using downloaded 3d models of material fragments, prefabricated building components and construction paraphernalia from industry websites. The resulting “working” drawing takes cues from the provisional, screen-shot aesthetic of BIM models and video games to suggest the inherently slippery nature of built form as a set of transitory holding patterns and material balancing acts that are constantly under negotiation.

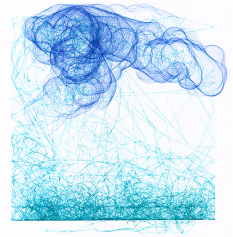
Storm

This drawing depends on a grossly inaccurate simulation of a storm. It's not necessarily a capture, record, projection or narration, but its relationship to three bodies of text are specific. The aim of this architecture is entirely in opposition to "black box" simulations: it treats computer code as characterization, log as information, and machine code as spectacle. The Python language code is written with a predominantly object-oriented organization and is predicated on a hierarchy of definitions that contain data and actions. With no intent whatsoever to seek a truthful allegiance to the realities of weather, atmosphere, fluid, gravity, or particles, this writing is nonetheless tethered to nature through authored conditional impositions.

The log file respects time in a way that the drawing cannot. It tells a linear story.

"...The horizon is currently understood to be at level 194.66728172. There are now 30 balls in the world. 18 of those balls are under the horizon and are fluid particles. 12 of those balls are over the horizon and are gas particles. There are 3 groups of fluid particles forming the sea. There are 2 groups of gas particles—clouds. The sea is active. The sky is tumultuous. A storm is building. The time is now 438. It is cloudy. A ball located at (324.56666666667269, 163.77793209876609) is being added to a group because it is close to a ball located at (342.91957839491522, 164.12761823211139), which is already part of that group. A ball that is part of a group is crossing the horizon. Therefore, the whole group must change state. The time is now 439. It is cloudy. The time is now 440. It is cloudy..."

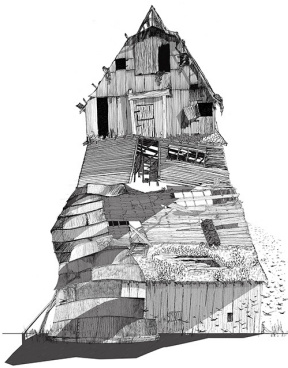
The machine code generated to instruct a vintage pen plotter is legible in isolation and subtly textured when the roughly six million characters are viewed in their entirety.



Agrarian Ruins

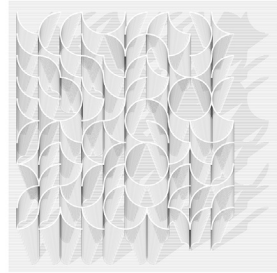
The plight of the Midwest is often characterized as a counterpoint to post-industrial congestion, of an endless horizon stretching towards the Great Plains. Today this landscape is defined by a different form of industrialization and move away from the distributive pattern of small farms and homesteads. Recognizing this, the painters and photographers of Midwest (Hart Benton, Wood and Adams) have suggested that within the triumphalism of toil and conquest over the land there also lie seeds of doubt and foreboding. Today this doubt has come to bear on a new generation of buildings that are the subject of Agrarian Ruins. Dilapidated and rotting they end up corralled by encircling rows of commercial corn. Too broken for any use they hang in limbo with only the fading memories of their builders to put up a dwindling defense. Cornered, oafish and ungainly these hulks appear to monumentalize the folly of expansionism and settlement. They turn a cautionary eye towards the hubris of the Jeffersonian Act. Agrarian Ruins presents a bricolage of abandoned forms that appear to gather together in the hope that they can survive in numbers. They are Frankenstein-like buildings made from parts that are patched together with an aggressive melancholia towards the country-folk who seem to have rounded on them.

Agrarian Ruins is a thesis project carried out in the 2016-17 academic year with associate professor Jason Griffiths acting as advisor. Discussions centered on the way the drawings initially refuse to adopt new media and how they can become synonymous with the generation they represent. This refusal lies in the hand-drawn elevations of buildings around Gosper County in Nebraska. This drawing process is then accentuated by a more covert use of digital collaging and overlay. Although the language of the computational drawing is suppressed it is equally important to the final mode of representation. This media is appropriate to the themes because the "collective" act of collaging drawings is a cypher for a collective resistance implied in the proposal. A resistance that lies at the heart of Agrarian Ruins.



100 Walls, Seed 42

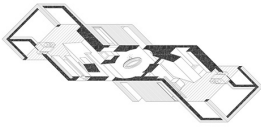
This drawing, one of a series of iterative experiments, explores the overlap between procedural design processes, conventions of architectural representation, and perceptual multiplicity. One hundred arced walls are arrayed according to an algorithm that allows for both continuity and discontinuity, producing a labyrinthine space within and between the curved walls. This space is conveyed via plan oblique projection and rendered only with line work, 14,404 arcs and lines, to be exact. The use of plan oblique adds a spatial dimension to the labyrinth; this depth is both reinforced and subverted by the intricate line work, which contributes to an ambiguity between the architecture and the picture plane, allowing for new ghostly figures to emerge within the field. The resonance between figure and field starts to suggest how representational ambiguity can generate new spatial conditions and effects.



Although deeply rooted in computational workflows, the project rejects the all-too-common use of parametric software as a superficial, fetishistic accessory to architectural design. Instead, it insists that such processes be synthesized with intuitive processes and disciplinary conventions in a way that opens up new spatial and perceptual possibilities. In other words, the code generates the drawing, but the drawing is more than the code. The artifacts of the algorithm are employed in parallel with conventions of architectural representation to produce a new and synthetic craft of drawing.

Doppelgänger - An Architecture of Estrangement: Three-Rooms

fabrication of images aimed at estranging more than seducing, questioning rather than persuading, analyzing more than representing



Drawing from Fyodor Dostoyevsky's first novel *The Double*, the studio meditates on the uncanny and estranging nature of otherness in a series of five inhabitable structures progressively increasing in the number of rooms and inhabitants. Despite their geometrical progression, moving from one room to three, to nine, to twenty-seven, to a "society" of rooms, the five projects are independent and operate through mutual juxtapositions more than sequentiality. Similarly to the novel, wherein the narrator assumes the same language, thoughts, and gestures of the characters in a delirious stream of consciousness, the five variations conjecture an architecture directly engendered by its inner logic and deprived of its author. The studio considers drawing as the distinctive process of architectural production, necessary to critically investigate the principles of construction, formal composition, and fabrication of images aimed at estranging more than seducing, questioning rather than persuading, analyzing more than representing.

An Architecture of Estrangement First-year core graduate studio UIC School of Architecture Spring 2018.

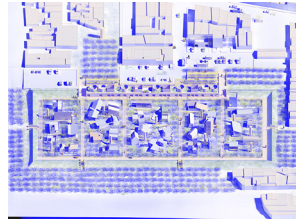
Housing No. 8

Apan Housing Laboratory

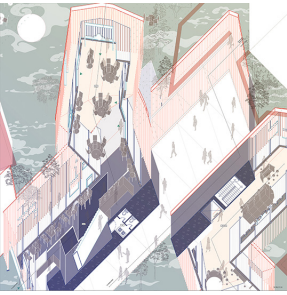
This project develops urbanism as a garden—wild and communal, without cars and streets but with fruit trees, cacti, agave, plants, paths. It is a community of informal relationships, a diverse collection of buildings that are pragmatic, vernacular, and typological.

“The idea to structure the urbanism with a strong presence of nature and the very concept of a ‘Laboratorio’ for housing connects the project to a set of historical references; for example, Le Corbusier’s neighbourhood in Pessac was also an experiment in housing and a reflection on the garden city model. But while Pessac still relied on fixed types for architecture (tower, zig-zag, arcade house, ‘quinconce,’ twin houses) and modern ideas for urbanism (geometry, grids, streets, repetition), MOS’s proposal is based on a very different model of urbanism related much more to the notion of a vernacular or picturesque ensemble. Here things connect via immediate relationships, and not through the repetition of exceptional buildings or walls that group things by separating them.”

Giovanna Borasi, Chief Curator, Canadian Centre for Architecture. Excerpt from “A Large Urban Garden Where You Can Learn About Architecture,” 2018.



Plan, Unplanned

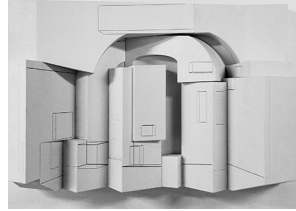


Plan, Unplanned is an exemplary student work sample from the first semester design studio of a 3-year Master of Architecture degree program. Plan, Unplanned is the final project of the first semester design studio which addresses the architectural medium of plan. Plans organize space and configure the social relationships and activity in a building. They are typically constrained by site context, distance to daylight and predefined programs, however here students begin with an unconstrained search for organizational possibility through patterns of lines, curves and figures. Other considerations are then sequentially incorporated, including tectonic and material specificity, site context, occupation and program. Plans and plans-with-depth (plan oblique or plan perspective) are used as a medium for design throughout the project. The final deliverable is a building in three-dimensions, but one that is primarily described through drawing and model that foregrounds interior organization via plan.

Following a playful and productive form-finding process, students imagine how their final plan iteration might be constructed. What differences and opportunities would emerge if the objects (walls, columns, poche) were constructed with a frame system like wood or steel, a massive system like concrete, structural masonry, rammed earth, massive wood or a surface system like prefab panels or composite materials? This requires some research into specific tectonic systems. With this research, students redraw their plan as a reflected ceiling plan with-depth (RCPwD) based on three different tectonic systems. What is the poche? Is it massive or porous? Homogeneous or varied? Oriented or omni-directional? How do the ceilings span or vault over each space? This drawing demonstrates some imaginative answers to these questions via a hybridized plan oblique drawing process.

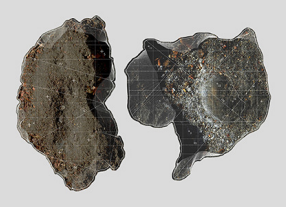
Not-So-Still Life

This “thick-drawing” is a meta-representation - it makes a critique of the conventional methods by which things are represented into the presentation of a new thing. Images are constructs that filter how and what is seen. This filter appears when representations, select information assembled and viewed in a particular way, are rehearsed enough to become a convention and affect vision, generally. Modes of imaging can become so familiar that we no longer see them as a construct or know how they limit vision. If new architectural production is to remain critically conveyed through representation, an examination of the methods by which we image is an imperative. A zoomed-in look at one filter enforced by linear perspective, our oldest most familiar representational convention, reveals a contemporary alternative. This speculative representation questions the necessity of both a single view point and the detachment of the space of visual representation from the space of the viewer through a critique of the conventional picture plane. Without a single station point and a flat plane of projection, two things essential to linear perspective, the self-consciousness of viewing a representation of a thing is abandoned. The presentation of ‘thingness’ itself is made possible and conventional codes of spectatorship and engagement no longer apply. Here, a range of viewpoints of a single space are registered simultaneously in the line work of a still life. a linear perspective representation of objects displayed within a room. Each object in this “thick-drawing” orients itself to a different viewpoint of the space, pulling the architectural planes that suspend objects with them. A new system of negotiated rotation is overlaid as planes are fractured and displaced as they jostle for territory within the original space. The perspective pleats with new seams and folds appearing as the range of viewing angles pull planes of the room represented into the room of the viewing audience. As this drawing is viewed by an audience on-the-move, the axial orientation of the space represented moves with the viewer, producing real-time effects of changing perception of space in a new and not-so-still life.



Topographic Survey of Two Sidewalk Holes in Downtown Los Angeles

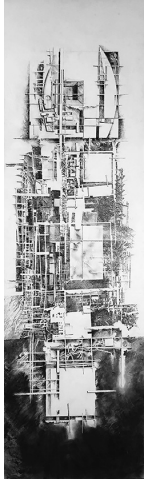
Perhaps there is some value to be found in architecture's long-established scalar languages.



The digital model presents a crisis of scale. With a quick scroll of the mouse wheel or two fingers on the trackpad, the view-port shifts from an external perspective to an interior detail. The seamlessness of this transition is disquieting. Questions of resolution now seem obsolete as the digital model holds every detail at once, a complete (virtual) construction of a thing yet to come. But perhaps there is something lost in this dissolution of scale. Perhaps there is some value to be found in architecture's long-established scalar languages. Are there not ideas that belong to the scale of $1/2''=1'$ and other ideas that belong to the scale of $1/16''=1'$? In this context, the drawing might become a medium through which scale can be questioned, reframed, and made surreally ambiguous. Such motivations guided the development of the drawing submitted here. "Topographic Survey of Two Sidewalk Holes in Downtown Los Angeles" explores the conceptual dimensions of measurement, description, and scale. Mapping out two micro-topographies, the drawing produces an absurd degree of precision and resolution. Yet, through the isolation of the sidewalk holes from their original contexts, the drawing also creates an ambiguous reading of scale and materiality, as viewers might not be able to discern whether they are looking at microscopic depressions or craters of monumental proportion.

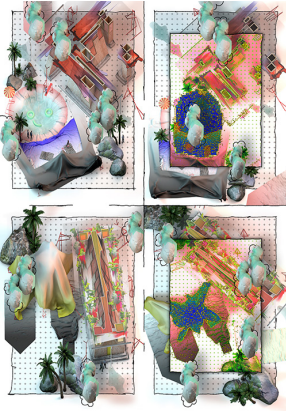
Palimpsest 001

The role of drawing plays simultaneously in both architectural thinking and representation. With the digital media and building modeling programs, there emerges a trend towards both hyper-realism as well as parallel codification, which situates between strategy and diagram. Likewise, the re-emergence of conceptual drawings as an abstraction of spatial ideas provides insight into a process. Seen as correlational companions to architectural design, these drawings exist as artifacts of the design thinking as well as works of architecture in their own right. These drawings sought not so much as definitive resolution but rather idiosyncratic speculation as to the possibilities of an architecture, serving to define a critical role in the establishment and development of a spatial thesis. While new software provides the means to develop extensively detailed representation of buildings and their performance, the loss of the ambiguity and abstraction of drawing is an issue of great concern. The act of drawing, particularly the generative painting or speculative sketch, is an exploration of ideas. It provides a foundation for which themes and connections might be brought forth in a design. Rather than seeing drawing as representational or design commodity, drawing is the initial imperative at the forefront of design. In the drawing Palimpsest-001, three themes were mediated upon: the contemplation of building, construction and its effects on the natural environment. The physical construction of the image is a combinative means of varying media: photography, montage, digital, transference and re-emergence in drawing. The image began as a series of photographs which documented construction and their invasiveness in the natural environment. The images were then rearranged into a photo montage, which was then manipulated further in Photoshop. A ghost image was then transferred to a plaster surface through a Xerox , xylene transfer. The unpredictable nature of the transfers became the foundation for the final palimpsest of a generative drawing. Returning to the original themes, which documented construction and building into nature, the drawing established three realms, the void-space of foundation; the drawing of construction and the building as an operative mediator between these realms.



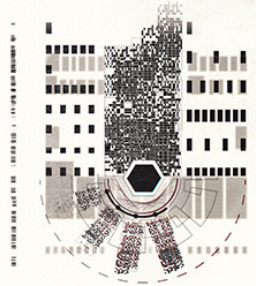
Instrument 09

In 2012, Google-X began filing the first patents for Loon. Project Loon is an airborne mesh network of remotely guided helium-filled balloons upon which a second internet will soon be built. Loon's spatial coordination relies on the algorithmic viewing of architecture, as a permanent stand-in for the low-visibility web surfing subjects inside. The algorithms are contingent on the detection of the quasi-universal formal qualities of all buildings; extracting shapes, edges, shadows, coloration and geometries from satellite imagery in order to disentangle architecture from roads, rock formations or vegetation. They index the surface of the earth into "building hypotheses," a statistical probability of pixels-being-buildings that ranges between one and ninety-nine percent. What follows are two of ten experiments with Google's recently released building detection algorithm. Each experiment depicts a pseudo-architectural object rendered twice, once for your pleasure and again for the pleasure of Google's open-sourced speculative algorithm.



Movable Digital Type(s)

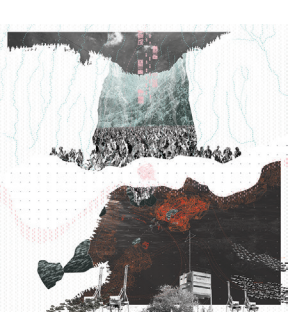
This drawing belongs to a larger series of daily doodles that speculate on technique and communication. The series of drawings were inspired by the question of whether graphic displays of information, aesthetics, and complexity are fetishized over legibility. What is the hierarchy between conception (of the author), reception (by the viewer) and legibility (the resulting dialogue). As a response the piece is composed as an amalgam of formal logic and emotional syllogism. Formally, it was constructed as a series of figure-ground groupings, with each iteration bringing forth a shift or displacement of elements with little regard to original place or rationale. They were rearranged, transformed, and mutated to fit their new frame. They remade themselves as parts to the whole. This process ensures that the final work is a palimpsest of forms, oscillating between its wireframe and figure-void groupings, reminiscent of an art assemblage whose construction is normative, but function and meaning is at times stochastic. In order to explore these questions, the advent and methodology of letterpress, along with the typographic work of Vasilis Marmatakis were kitbashed with Ash Thorp's techniques for creating user interface for films as the starting points for visual and methodological inspiration. The drawing oscillated between letterforms and typesetting as figure-ground, built of an assemblage of UI assets, and the register of those elements. Letterpress printing enjoyed a 500 year primacy as a mass-communication device. In an homage to the letterpress process, the drawing was constructed on a black background with various shades of white and was only reversed as the last step to reveal the finished image. At the heart of this drawing is the question of conception, reception, and perhaps most importantly, legibility. Pedagogically, we must ask ourselves whether our goal is to create an image understandable to ourselves, understandable to others, and if a balance must be struck, how we ameliorate the process and final-piece with our design desires.



Bridging Kalihi 1

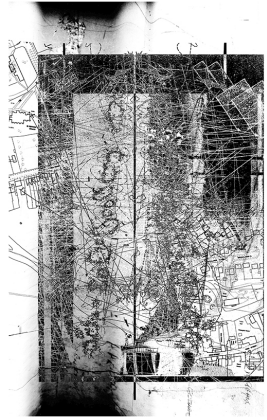
Architectural images are used to develop ideas, convey information, and provoke the imagination, both in ordinary and fantastical realms. Drawings, photographs, film, models and other representational media tend to be intimately related to the subjects they are portraying, frequently becoming the topic of discourse themselves. What makes an image mere representation? When does an architectural artifact become the creative work itself? As students experience the design process in architectural education, the notions of drawing their designs and designing drawings are often juxtaposed and sometimes conflicting. Why do architects draw? When do architectural drawings become statements or propositions? How can the creation of images provoke the imagination or stimulate architectural discourse? How can we teach design through drawing? Draw Story is a pedagogical framework that explores the process of drawing as both a thinking and designing tool. Understanding context; exploring media, scale, ways of seeing; defining elements, components, layers, and creating new narratives are all part of this creative process which finds parallels with both writing and designing objects, buildings, and cities. Resulting drawings often have the potential of exploring or exposing identity; questioning reality and / or proposing new futures. “Bridging Kalihi” presents exemplary student work created by Christopher Songvilay during the Fall semester of 2018 for a Draw Story iteration exploring the identity of segments of the city of Honolulu based on the ahupua’a (Hawaii’s indigenous land divisions) which span from mauka (mountain), to makai (sea). This drawing presents the current complex and contrasting relationship between the mauka and makai sides of Kalihi Valley. The virgin character of the mountain, associated with cultural values and indigenous traditions rooted in respect for the people and love of the land, abruptly meets the vast, unfriendly industrial landscape that borders the coast. The drawing presents natural and artificial systems attempting to co-exist, the melancholy of what used to be, and a search for how to fill in the resultant gap that exists in between. Schools of fish transform into fleets of cargo; coral reefs merge with landfill, remnants of World War II march along the shore.

Christopher Songvilay
Karla Sierralta, Instructor, University of Hawaii at Manitoaba



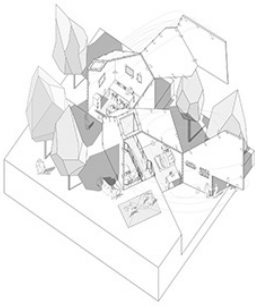
Skybadium and Hippodrome: the geometry of clouds

A virtual sky garden, only accessed in augmented reality sited above the actual site of my "Walled Garden for Lebbeus".



Inhabiting Abstraction

This plan oblique shows a building to come. It documents and animates a 1/16"=1' physical study model. The drawing began early in the design process as the client expressed an interest in looking inside the model. At that point it was a simple massing, just a hollow foamcore shell. However, when the client untapped and swung open a roof plane, an opportunity arose.



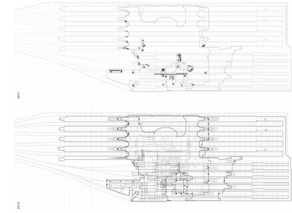
In our next meeting, I revealed the interior by employing a developed surface unroll technique instead of a cross-section “cut” through the wall panels. Robert Adams drawings were on my mind, but perhaps more so were El Lissitzky’s Oblique Drawing for the Proun Room (1923) and Peter Eisenman’s House X Axonometric Model (1978).

The abstract representational material properties of those works led me to ask the client to consider building the house with CLT (Cross Laminated Timber)—a construction material I liken to the qualities of foamcore. Additionally, the tape used in constructing the physical model would be translated in the building proposal; intended to be literalized as exposed strapping.

The model base is drawn as an object site model, shadows are cast from a photography spot light, and the drawing is inhabited by construction workers.

Border/Architecture

In 2018, the 'Co-Location' Joint Checkpoint Scheme governing the rail-link between Hong Kong and mainland China has radically changed the concept of border: the border is no longer a line drawn on a map but thickened and dimensioned as architecture and space. In 2047, the political border between Hong Kong and China will be dissolved: how could architecture act against the political and resist the de-bordering? How could space itself reform the border? The drawing describes the transformation that will happen during this process of de-bordering at the Hong Kong checkpoint of the rail link.

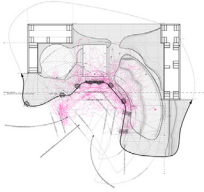


When a border is conceptualized at an architectural scale, it exhibits spatial characteristics and generates architectural implications. The contradictions in these scenarios become a spatial manifesto for the socio-political relationship between Hong Kong and China. This drawing is one of several selected student drawings from the 4th year undergraduate studio 'Hong Kong Nation' taught in the spring of 2018. Students were asked to consider the following question: Between the present day and 2047, what transformations to Hong Kong's political-geography are necessary for the territory to legitimate an identity as: part of the People's Republic of China; part of the Pearl River Delta region; or as an independent nation? The studio acknowledges that many students are eager to develop architectural modes of thinking that allow them to consider pressing political and social issues. It also challenges the capacity of architectural drawing, at different scales of representation, to act as a mechanism for that inquiry. The selected projects suggest that drawing itself, as a speculative imaginary, has an enduring capacity to envision and interrogate the choices open to our societies.

Reality Capture as Workflow Validation: NavADAPT LAB

Reality Capture as Workflow Validation: NavADAPT LAB

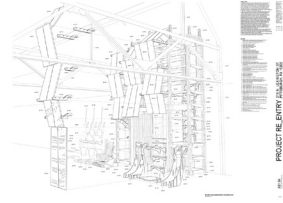
This drawing represents the trace of human motions across a landscape. The pink lines reflect motion capture data of a user's hands throughout a cooking routine within a prototype kitchen. The precise three-dimensional locations of the test subject's hands were collected using electromagnetic motion sensing via two Razer Hydra gaming controllers, one mounted to each of the subject's hands, and interpolated to accurately reconstruct a trace of the user's motions throughout the routine. The trace is overlaid onto a plan of the prototype countertop in order to situate the data within its context and to facilitate evidence-based analysis of the built artifact.



The NavADAPT LAB is a mobile prototyping laboratory being utilized in the development of an adaptive kitchen for disabled veterans. Conceived of as an ergonomic landscape, the countertop of the NavADAPT LAB is designed to operate like a "command center" for seated users and is embedded with networks of tactile cues aimed at creating a rich environment to help visually impaired users and users with memory loss to orient, navigate, and keep track of items throughout the cooking process. The composite drawing was developed to understand, represent, project, and assess design resolution of the NavADAPT countertop through the combined study of underlying, primitive regulating geometry and parameters; proposed physical form; and real-world user data collected through physical testing of built form.

RE_ENTRY: Construction through Drawing

RE_ENTRY: Construction through Drawing Technical drawing created collaboratively through multiple software platforms utilizing vector based digital representation and Building Information Modelling (BIM). Pragmatically, it is a graphic and written record of design decisions made by community stakeholders, architectural students, and labor force apprentices in training. Representationally, it illustrates a mechanism for the exploration of detail in the context of figural and spatial condition. Presented as an partially exploded perspective, the drawings seeks to transmit concepts visually as one would experience them, as a compliment to a larger body of technical drawings that explore object qualities or two dimensional relationships that may remain too abstract for the community at large whose hands are involved in realizing the work.

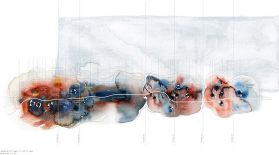


The subject of the content is PROJECT RE_, a non-profit organization focused on community advocacy, job skill training, and the re-use of material in building construction. The construction resulting from this drawing reflects the partnering organizations involved in realizing the organizations mission, and their productive paths. The frame is digitally fabricated utilizing CNC technology with the digital content included in the Construction Drawing being the mechanism of production. Re-purposed hollow core doors diverted from landfill constitute the skin which is manipulated through traditional methods of craft in job skill training and post processed with CNC technology. All other components are manipulated through hand craft guided by annotation embedded in drawing content.

Urban Design Build Studio (UDBS) Students: Daniel Gehr, Kyle Woltersdorf, Harris Mazur, and the UDBS

Olfactory Clouds

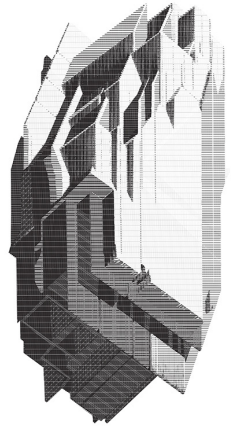
Olfactory Clouds uses two-dimensional orthographic projections and abstracted notation to represent the experience of walking around a pond on a humid, summer morning. The drawing content includes: 1) a mathematically measured line that represents the distance of the path walked, 2) mathematically measured plan and sections of volumes created by "clouds" of scents made by plants along the path, and 3) watercolor painting and text used to describe the scent characteristics of the air in each cloud. Olfactory Clouds is aligned with the tradition in architecture and art of walking as an aesthetic practice. In Walkscapes, Francesco Careri situates bronze age stone menhirs of Brittany, France and the psychogeographic maps of the Situationists in 1950s Paris together in the same conversation about walking as a tool for designers. In the case of the megaliths, vertical stones are erected as straight lines pointing to the sky. Multiple stones in a sequence form longer lines that, by the 21st century, have been walked many times by people from all over the world. Situationist maps include words, images, and wandering lines to describe the experience of groups of people walking the city. In both examples above, walking lines makes collective space. Bernard Tschumi's Manhattan Transcripts and Lawrence Halprin's Motation scores stand out as examples of drawing and walking that inspired the design and construction of public space in the later half of the 20th century. Both designers employed photograph strips with free-hand sketch notations in plan and section in their work, which captures (and choreographs) the experience of people in time moving through spaces. In the same way Olfactory Clouds was initially used as a design research tool to record the experience of walking outside and foraging for food plants. Later the drawing informed the design of a public table and wild food market for downtown Charlottesville, Virginia. The table was organized as a long linear street activated by the people who walked down it. Finally, the drawing communicated to others how events and experiences might unfold when the line of the table and market is walked.



TELE-PRINT

Drawing's role in representation could be rebranded as a mechanism for digital subversion and erasure.

Drawing's role in representation could be rebranded as a mechanism for digital subversion and erasure. In pursuit of distancing one's work from the legibility of digital processes, this drawing employed a series of translation tactics to create pseudo-Dot-Matrix renderings. The drawing was initially created from 3D model studies in projection following rules borrowed from Eisenman's House VI. Four high-resolution oblique models were rendered and reprocessed in pursuit of removing traces of digitally rendered information. Moving through projection and abstraction to representation, "Tele-prints" obfuscates process; relocating and garnering new identities for imagery.

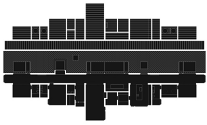


Meng Wang
Jeffrey Halstead, Instructor, University of Michigan

Hall House

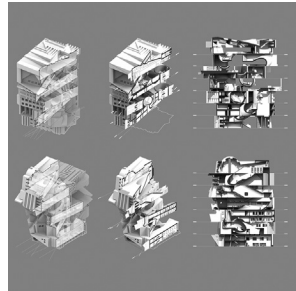
This drawing is an act of coordination. It gives momentary equality to the spatial ordering devices and prominent objects in the Hall House, distilling them into a composite whole. It does so with the objective of identifying potential resonances and dissonances across the project's elemental parts—its hall, its face, and its collection of chambers hidden behind. The drawing encapsulates a line of questioning regarding the relative importance of certain types of architectural information. Spatial, figural, material, and tectonic information resides concurrently within, yet elects to be impure in its adherence to architectural drawing conventions. This negotiation to find a new equilibrium within these different types of information through drawing is, for us, a fundamental and critical tool in the process of making architecture.

Spatial, figural, material,
and tectonic information re-
sides concurrently within,
yet elects to be impure in its
adherence to architectural
drawing conventions.



So_Scopic

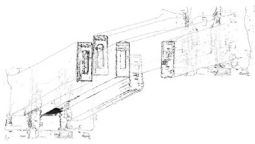
This drawing explores the relationship between the “building elevation” and cinematography, and the roles of both in contemporary set design and architectonic formation. It examines how representational space has been envisioned in architecture, fine art and film, and maps a parallel between vantage, orthographic/perspectival projection, and techniques for reimagining how we, as architects, section through space. The drawing works as a storyboard, with each level of a hotel represented as a snapshot in a timeline. Floors of the hotel were rotated to cut up the linearity of that timeline and create overlaps between guest rooms and public space. This informed the approach Craig took to how he thought the drawing should best use architectural conventions and resulted in him staggering and rotating the positions of each floor's section datum.



Craig Zehr
Jeffrey Halstead, Instructor, University of Michigan

Representation of the Exxon Building, No.5

what is the role of a drawing, if the world is turbid and imbued with bitmaps and meshes?



This drawing is one of the series representations of the Exxon building at 1251 6th Ave in New York. A point cloud is generated from Google satellite screenshots with photogrammetry, which reinstates identifiable pixels across images to their relative spatial locations in the 3D model. The point cloud is then constructed into a highly refined mesh, an exhaustive portrayal of site conditions. Despite the great convenience of acquiring detailed spatial and chromatic data from free Internet sources, the data need to be processed to become information that may facilitate design, during which abstraction and subjective narratives are inevitably involved. This drawing is one of the explorations that try to flatten the 3D data into 2D drawings, while selectively remaining some features in order to have various representational affects, which may suit the representation in the spectrum between informativity and aesthetics, documentation and reinterpretation. In this drawing, the edges of the elements on-site, glazing, roads, etc., are mapped on the photogrammetry mesh by discerning its color differentiations and creases, and are then translated onto the paper through oblique projection. Benefiting limitedly from the excessive free data, the traditional design approach of making a line drawing is instead more strenuous. Therefore it tries to raise a question: what is the role of a drawing, if the world is turbid and imbued with bitmaps and meshes?

MArch II Design Research Studio at the Cooper Union in Fall 2018.

So/-



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