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ABSTRACT BOOK

2019
ACSA/EAAE
TEACHERS CONFERENCE

practice of teaching

THE TEACHER'S HUNCH

Practice of Teaching | Teaching of Practice: the Teacher's Hunch

2019 ACSA/EAAE Teachers Conference

ABSTRACT BOOK

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The HUNCH and Architectural Pedagogies I

Friday, March 29, 2019
9:00-10:30

Critical Historiography and the Design Studio Pedagogy
      Amir Ameri, University of Colorado Denver

The cultures that in their divergent multiplicity were once effectively segregated in space and time, find themselves in close proximity, dialogue and potential competition and conflict in both literal and virtual space as a direct consequence of globalization. Coupled as globalization is with the technologies of the information age, it has dramatically and fundamentally transformed our cultural and cross-cultural modes of communication and exchange, and along with it our cultural experience of space and time. These transformations are not formal and aesthetic per se, but more profoundly cultural and ideological. As such, they are measurably changing all cultures involved in unforeseeable directions. These changes, along with a multi-cultural context to architectural practice in a global economy require a shift of emphasis in architectural pedagogy to better prepare the next generation of architects to meet the unique demands of a plurality of cultures in a state of flux and change. Assuming that culture and architecture are indispensably linked, and architecture serves, among other cultural mechanisms, to transform our ideas, assumptions, and beliefs about the world into a factual experience of them, what is pedagogically imperative in the face of globalization and rapid cultural change is first and foremost a heightened and at that critical understanding of the complex dialogue between culture and architecture. In turn, the unique challenges of practice in a global market place mandate a fundamental pedagogical shift from the traditional emphasis on the acquisition of bodies of knowledge to fostering analytical, critical, and creative abilities that are not necessarily and always culture specific, i.e., the ability to analyze, organize and manipulate various bodies of knowledge in place of their mere amassment. Given the speed and changing modalities of global communication and cross-cultural exchange, bodies of knowledge in their cultural specificity face obsolescence with increased pace, leaving analytical, critical, and creative abilities as the only viable option for keeping pace and/or anticipating cultural change. The history of Architecture has and will continue to have an indispensable role to play in any curriculum that seeks to instill a heightened understanding of the interconnectedness of architecture and culture. Yet, to play a pivotal role in fostering a spirit of critical exploration and innovation, architectural history has to engage and exert a critical impact on studio pedagogy and that not merely as a repository of formal and aesthetic precedents to justify reiterate choices. Since secular institutional building-types are the predominant focus of the design studio instruction, engaging the history of their development and revealing their cultural and ideological underpinnings systematically and critically can establish a strong complimentary link between architecture history and design pedagogy. To demonstrate, I'll use the movie-theatre as a case study. I will begin with a concise overview of the history of the movie-theatre as a cultural institution and a building type. I'll point out that there has been a

deliberate and persistent logic to the design of the movie-theatre from inception. Between the world at large and the cinematic world, or else the real and the imaginary, the movie-theatre has insinuated, by design, an elaborate and deep threshold that mediates and oversees the passage to and from an elsewhere that it constitutes to contain the imaginary and the 'real' world from which it is sequestered. The modalities of this placement have changed over time in direct response to the changing relationship between the real and its assumed imaginary other. With every technological abridgement of the construed distance between the real and its imaginary double, including the addition to the moving-picture of sound, color, stereoscopy, etc., there have been corresponding changes in the design of the movie-theatre aimed at re-establishing the construed distance between them. The motivation behind each change, be it from the Nickelodeon to the Movie-Palace, to the Post-Palace mall cinemas and Multiplexes, has been a constant. To safeguard the aura of the real as the self-referential, non-representational other of the imaginary, the movie-theatre, as an institution and a building type, has systematically fabricated an outside to the imaginary, if only to locate and safeguard the real at a safe distance. This is not because the two are diametrically opposed. Rather, it is because any perceived line separating them is always a construct and never a given. As an institution and a building type, the movie-theatre substitutes a formal, spatial, and experiential clarity of distance for the very spatial and temporal dimensions that cinema as the imaginary fundamentally places in question. The institution of the movie-theatre has been an instituted resistance to the subversive effect of the imaginary on the real as the presumed self-referential, non-representational other of the imaginary. The intent in engaging the history of the movie-theatre as a secular building type, coupled with a systematic and critical re-evaluation of its ideational presuppositions at the outset of the design studio is twofold. The first intent is to help students develop the type of analytical and critical skills that are requisite to deciphering the intricate relationship between architectural form, function and ideology. The second intent is to explore how a critical historiography of secular building types can foster a spirit of exploration, experimentation, critical engagement, creative thought and innovation, that are necessary skills for architects in the global information age. To this latter end, a critical historiography of secular building types may readily serve as an analytical foundation for a studio pedagogy that does not ask students to reproduce either the form or the logic of the type. The critical re-evaluation of the building type may readily form the parameters of a new context for design, within which the link between the formal/architectural properties of the building type and its institutional/cultural presuppositions could neither be acknowledged nor ignored, neither reinforced nor discarded. A context within which there could be no intuitive and/or positive re-formulation of the building type in affirmation of the link, but only a critical formation in recognition of the link. What, for instance, one may ask, would a movie-theatre be like, that did not try to sublimate the imaginary, but recognize its undecidable nature. If the imaginary defies any borderlines and the clarity of any distinction and separation from the real, can something of the same logic be taken to forming its place. If the movie-theatre as we know it substitutes a clear distinction between a host of spatial and formal oppositions - center and periphery, path and place, container and contained, interiority and exteriority - can one conceive and design a movie-theatre whose formal and experiential properties do not lend themselves to or

support the conception of the imaginary as the other of the real. In short, can one design a building that poses questions instead of offering preconceived answers. The pedagogical intent of such a design exercises is to promote a conscious re-evaluation of all the subconscious assumptions regarding spatial organization, the relationship of parts to whole, the inside to the outside, the particulars of volume and mass, solid and void, path and place, structure and material, ornamentation, proportion, scale, and others. This is with the intention of designing a building that in the end is all too familiar and yet all too alien, one that is neither a copy nor strictly an original. A building that speaks silently of the designer's ability to willfully manipulate the language of architecture as opposed to faithfully re-produce its various speech acts. This last is, perhaps, the most essential skill in the global information age.

The School as City, the City as School
    Mireille Roddier, University of Michigan

Educational institutions have long drawn their lessons from the most naturalized of learning environments: cities. The classical city took care of our civic education. The more chaotic city develops our "street-smarts." If once considered a marginal form of knowledge, such "smarts," along with the corollary "hustle culture," have today made their way into normalized and teachable forms.[1] From the Greek city to the contemporary urban jungle, cities unquestionably perform as "total schools," where one learns all of the essentials for not only surviving, but also for living together as well as for getting ahead. This paper follows the two-way flow of lessons drawn between schools and cities, distinguishing between planned and informal organizations on one hand, pedagogical contents and their corresponding spatial arrangements on the other. In doing so, it posits ways in which current institutional conversations on diversity and equity can find their way not only into teaching structures, but also into the content of our studio briefs as well, informing the ways in which cities can be designed more equitably. In her 1914 book, *The Feminist Education of Girls*, Madeleine Pelletier regards the city, if not as a site of equality, at least as a site of possible emancipation. "As much as possible, the young girl will be presented with examples. She'll be taken to the doors of the Grands Magasins at the hour the employees get off from work. Lovers waiting for their mistresses will be pointed out," she writes, as will quarrels between husbands and wives in poor districts, prostitution during nocturnal walks, or the haute bourgeoisie at the races.[2] The exposure to this spectrum of experiences is what, according to Max Weber and the urban sociologists of the modern city, expanded the urban dweller's identity and yielded a high degrees of tolerance. This quality, Richard Sennett argued, was already present in the Greek city, from which we should learn. "A city ought to be a school for learning how to lead a centered life.... We need to see differences on the streets or in other people neither as threats nor as sentimental invitations, rather as necessary visions. They are necessary for us to learn how to navigate life with balance, both individually and collectively."[3] Urban walks and observations were informing sociology syllabi decades before they would find their way into architectural curricula.

During the 1960s, lessons from urban vernaculars were finally placed at the service of formalized design education, as best demonstrated by Bernard Rudovsky's MoMA exhibit and Robert Venturi, Denise Scott Brown and Steven Izenour's Yale studio. In the design for schools, Herman Hertzberger sought to break the artificial boundary between interior learning spaces and their exteriors "by understanding the school as a city," bringing in scaled elements of public space—the porch, the street, the square.[4] "Teaching and learning are also performing arts, and the city is the theatre of these performances," wrote Shadrach Woods in the wake of the 1968 student rebellion. "The theatre of our time is in the streets. Education, then, is urbanism."[5]

This notion of city as theatre, or *Teatrum Mundi*, is at the heart of the methodology that structures this paper's argument. The city, like the classroom, like theatre, carefully calibrates the relationship between performance and stage, between social interaction and its physical context. It seems obvious why architectural education only drew lessons from the un-planned city, from vernacular adhocism.[6] After all, the planned city held no secrets from those who produced it in the first place—at least not formal ones. But, as investigated in this research, we could return to the city some of the lessons produced behind the walls of academic institutions.

Our classrooms increasingly reflect the social and economic concentration of energy (whether in the form of wealth, power, or knowledge) found in the city/world, and graphically represented by the ever ubiquitous exponential curve created by unregulated competition: our best students are better than ever, the lower end increasingly below average. Such classrooms are difficult to handle, pedagogically. We turn to bell hooks or Pablo Freire, but also, as Jacques Rancière suggested in "The Emancipated Spectator," to those who theorized theatre performance. Since Artaud and Brecht, the early 20th century writers whom Rancière actively draws from, concepts of belonging and of performativity have been developed by feminist performance theorists, and have become instrumental in informing inclusive models of teaching, reflecting Vicki Bell's assertion that "identity is the effect of performance, and not vice versa."[7] Theatre has always been inspired by the classroom, which itself has drawn its lessons from the city. We could now consider the ways in which design education can uniquely contribute back by reversing this movement, and by channeling new pedagogical models into the city, as much through the staging of performances as through the performativity of stages. This would enable the city itself to highlight, inform, ameliorate and potentially teach us all about inequalities, disabilities, sustainabilities, and inclusivity, not just how to get ahead.

[1] Griffith, Erin. "Why Are Young People Pretending to Love Work?" The New York Times, 26 January, 2019, https://www.nytimes.com/2019/01/26/business/against-hustle-culture-rise-and-grind-tgim.html (accessed 27 January 2019)
[2] Madeleine Pelletier,*L'Éducation fÉministe des filles*(Paris: Giard et Brière, 1914)
[3] Richard Sennett, *The Conscience of the Eye: The Design and Social Life of Cities*(New York: W.W. Norton & co, 1990), xiii.
[4] Robert McCarter, *Herman Hertzberger* (nai010 publishers, 2015), 135.

[5] Shadrach Woods (1969) The Education Bazaar. Harvard Educational Review: December 1969, Vol. 39, No. 4: 119.
[6] to borrow the term from Charles Jenks's 1972 book of the same name.
[7] Vikki Bell (1999) Performativity and belonging: an introduction. Theory, Culture and Society. 16(2): 3. This essay introduces an edited issue on the theme. Other texts of architectural and spatial relevance include: Gregson, N. and Rose, G. (2000). "Taking Butler elsewhere: performativities, spatialities and subjectivities." Environment and Planning D: Society and Space. 18: 433-452; Leach, N. (2002). Belonging: towards a theory of identification with space. In J. Hillier and E. Rooksby (eds), Habitus: A Sense of Place. Aldershot: Ashgate; Fenster, T. (2004). "Gender and the City: The Different Formations of Belonging." in Seager, J. ed. A Companion to Feminist Geography. Hoboken: Wiley Blackwell, 242-256.

"Hating on" Architecture: The Pedagogy of Disciplinary Distance
John McMorrough, University of Michigan

The return to a progressive agenda for architecture pedagogy addresses the pressing urgency of social, economic and environmental injustice to recast not only the role of architecture moving forward but also the identity of architecture looking back. In these perspectives, architecture (as a profession, as a discipline, and as a subject) is often not a solution, but a problem to overcome, perhaps nowhere more so than in the contemporary instruction of its history and theory.

The figure of architecture as an embodiment of power and authority, and therein a subject of critique, has a long tradition, but the adoption of this edifice complex as the very logic of architectural education is more recent. Shades of this inclination are inherited parallels to broader cultural shifts (from Marxism, psychoanalysis, and deconstruction, to post-colonialism and various forms of identity histories), but the more specific origin is the Italian historian Manfredo Tafuri's disavowal of operative criticism as discourse written in support of architectural developments (his preference was for the opposite). In the wake of this articulation and the resultant division of labor between the theory and practice of architecture, the discursive complex (historians, critics, instructors, and doctoral students) has come to understand its role as an opposing counsel, axiomatically dedicated to dismantling the propositions of architecture. The evolution of this adversarial stand toward its subject of study has resulted in a critical lingua franca where architecture is seemingly all over (argued as simultaneously ubiquitous and moribund).

The question of "hating on architecture" (in the parlance of contemporary expression, to "hate on" implies more than to dislike, but rather to feel or act spitefully toward), regarding evaluating the veracity of claims, is not the present concern of this effort. Rather, the focus of this paper is to concentrate on the rhetorical commonality of a variety of contemporary positions regarding the instruction of architecture's theory, and therein its proposed model of practice. As a manifestation of this prevalent phenomenon, this paper examines how the return to the social (justice) in the teaching

of architectural histories articulates a resolutely antagonistic position about practice. The paradox of this systematic dismissal conflates the relation of practice and theory, and historical inquiry and contemporary work, into an amnesiac model of in-operative criticism.

Doctor Jekyll and Architect Hyde: Investigating the Double Nature of Architectural Teachers Within Polytechnic Schools

Daniele Campobenedetto, Politecnico di Torino
Caterina Barioglio, Politecnico di Torino

If the connection between design knowledge and related skills has been a challenge in architectural schools among Italy and Europe in the lasts decades, the roles of the teachers in the Ecole des Beaux-Arts and Bauhaus experiences suggest that these approaches are grounded on two different epistemological assumptions of inter and transdisciplinary architectural education.

This paper analyses these assumptions and their roots to discuss the integration of divergent epistemologies, teachers roles and wicked-problems solving skills requested by the current interdisciplinary debate in architecture-polytechnic schools for facing the complex and urgent societal challenges of our era.

In order to give some interpretative elements to answer these questions, this work analyses two key periods in the definition of the teacher's role within the history of the school of architecture and engineering: the years from the French Revolution until the constitution of the Ecole des Beaux-Arts, and the Bauhaus experience.

The Ecole des Beaux-Arts was born during a debate that dates back in the pre-revolutionary years. In the first half of the XVIII century, the Ecole des Ponts et Chausées was established to make possible an overall control of the French territory. Subjects as geometry and maths were meant to be the students' tools to design the infrastructure of the "absolute monarchy". Teachers were asked to transmit a theoretical knowledge, while students to focus on design and predicted outcomes (for instance, the cost of a mile of road, with a given cross-section): apprenticeships and "learning by doing" processes were just not taken into consideration (Saints, 2008).

With the foundation of the Ecole Polytechnique, this transformation toward a design-based approach was taken forward. Jean-Nicolas-Louis Durand set up a school in contrast with the century-old cooptation system that underpinned the activity of the Academie Royale.

This was a pivotal moment for the teacher's figure which shifted from a professional working on actual projects with students/apprentices towards an intellectual transmitting methodologies of works via theoretical seminars .

Nevertheless, after a couple of years this systems showed his weaknesses: the design process that characterised the Academie Royale was transferred and applied in the revolution years (Annie, 1989; Szambien, 1986), while the legacy of the architectural project was partially embedded in the programs of the Ecole Polytechnique.
The birth of the Ecole des Beaux-Arts was an attempt to draw a boundary between two different emerging professions: the architect and the engineer (Picon, 1988, Saints, 1983).

The patron's systems and the competitions based on the design of public buildings set a new role for the architectural scholar. The atelier was, therefore, in between the apprenticeship (with a maitre and a strict hierarchy among students with different experiences) and the intellectualisation of the design practice that started within the Ecole des Ponts et Chausées (Middleton, 1982). In the midst of the turn from the XVIII to the XIX centuries, the design teachers' role was then split in two models: one looking at the design practice and skills as a key activity, the other looking at the abstract knowledge to standardise the design process.

After more than a century, the Bauhaus tries to recompose this separation. The staatliches Bauhaus was the outcome of a long reforming effort of the German school of applied arts, rooted at the end of the XIX century. Foundedin 1919 as the fusion of the two existing institutions of Weimar (the old Academy of Fine Arts and the Kunstgewerbeschule),the Bauhaus was a compromise between their two ideological statements: the traditional art-academy and the workshops-based approaches (Wingler, 1962). The Bauhaus aimed to address arts and craft education toward needs and means of the modern era. This approach became tangible especially after 1922, toward a reconciliation of the craftsmanship design with industrial production (Gropius, 1935). eveloped by Walter Gropius in 1922, the well-known wheel diagram clarifies the interdependence between theoretical-formal teaching and the practical work in the Bauhaus workshops. Despite the teaching was less systematic than the one suggested by Gropius's schemes, the diagram reflects the teacher's role in recomposing the artistic-intellectual dimension with the practical design-based one.

In such model, the Vorkurs was the course that all the students had to pass after the first year, being the checkpoint for teachers to control - and debate - the basic knowledge and fundamentals of the whole school. Technical and formal experiments were carried out in the workshops, where students were apprentices working hands-on with qualified craftsmen to produce prototypes for industrial manufacturing and other clients.

The school was labelling itself as "economically useful and inventive", but the attempt to interdisciplinary reconciliation of art, technology, architecture and engineering did not completely success (Saint, 2008).

How this history affected and affects the current Italian context? Nowadays, schools of architecture inside polytechnic institutions are and have been in an un usual position: two different teaching approaches, the theoretical and the project-based one, permeate

the whole educational path. Italian polytechnic schools host specialist and technical courses that pay a tribute, in terms of method, to the Ecole Polytechnique, while the architectural atelier has its roots in the Ecole des Beaux-arts and the courses like the industrial design look at the Bauhaus experience.

To look at the different epistemological assumptions hosted by the polytechnic institutions and to face them through a wider discussion that goes beyond teaching practices is thus proposed as a way to make interdisciplinary teachings effectives. In this challenge, the role of teachers themselves is presented as fundamental because of their possibilities to continuously adjust the boundary between the different assumptions involved and to intertwin them within the polytechnic culture.

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The Practicing Academic; Insights into South African Architectural Education.

Nischolan Pillay, University of Johannesburg
Yashaen Luckan, University of Kwazulu Natal

Architectural education, in the past, had a grounding in a strict apprentice or pupillage method of training architects, the apprentice was someone who worked or trained under a master that transferred skill through a "hands-on" approach (Bhattacharjee & Bose, 2015). Architecture was regarded as one of the arts and there was no formal training to qualify one as an architect (Craven, 2017). Vitruvius had published "Ten Books on Architecture" that led to an attempt to summarize professional knowledge of architecture and in doing so became the first recognizable architect (Nikolev, 1979). The architectural profession spread throughout Europe in the mid-16th century and the likes of Palladio and Alessi became the world's first known architects (Craven, 2017). Although architecture had become a profession, it wasn't up until the late 19th century that architecture became an academic pursuit through an institutionalized educational system known as École des Beaux-Arts, however, the pursuit of a strict academic scholar was not the focus (Benhamou, 1989). At the beginning of the 1800s, The University of Berlin in Germany forged the fundamental research and scholarly pursuit

(Steven, 2014). Architecture, like the professions of medicine, law etc. became a system of academic pursuit where professors concentrated deeply on academics first and professional work second. It is through the lens of history that we can decipher how architecture became an academic discipline almost devoid of its vocational nature. In its current standing, various universities place a high emphasis on research output from their academic staff. Presently, architecture schools in South Africa recruit lecturers on their academic profiles, rather than their vocational experience. An approach which has devalued the input of professional practice into education. Accordingly, there has been an increase in an academic pursuit rather than a professional one for the lecturers that teach architecture. This research explores the views of academics on architectural education, teaching methods and the importance of practice at South African universities. The authors of this research provide an auto-ethnographic insight into their invaluable experience of being academics at two large Universities in South Africa and concurrently run successful practices. The research makes use of a mixed method approach of secondary data from literature and semi-structured interviews posed to academics. Initial findings reveal that academics are pushing the industry to play a part in the education of architects, however, the extent must of this is yet to be determined. If industry plays a role in the education of architects, what factors are considered and how does this intertwine with the academic nature of training? What strategies are academics employing to make sure students are vocationally well trained and academically capable? Another important question to ask is what qualities make an academic architect in the 21st century?

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Educational Philosophy about the HUNCH I

Design Teaching Practices: Design Teaching as a Mirror of Epistemological Paradigms Relationships between Design Epistemological Models and Design Pedagogical Approaches

Michela Barosio, Politecnico di Torino

In order to answer the question whether the teaching should primarily focus on general transferable skills of design practice (such as typology, tectonic or compositional issues) or if it should formulate studio assignments in line with contemporary agenda, be it socio-political or eco-cultural oriented, it is necessary to understand which kind of knowledge we want to transmit/produce in the schools of architecture. Are the schools of Architecture a place where we develop the knowledge on Design, in the sense that Design is considered as the product of pedagogy and research, or are the schools of Architecture the place where we produce knowledge through Design, considered as a tool able to improve knowledge on broader fields, and therefore both a pedagogical and research tool instead of a mere pedagogical or research outcome?

Design epistemological paradigms: design as an object or as a tool? Among the several epistemological approaches to design, this paper focusses on two of the more stablished one and on a third one emerging in the last decades. All of them are put in relation with well-known philosophy of science's theories. The first approach assumes that Design is characterized by methods and techniques that can be described and analysed as well as the architectural or urban outcomes that are the final result of deigning process. This approach refers more to the neo positivist paradigm considering design as a possible object for scientific research through the verification and validation of its methods and techniques but also through the scientific observation of its products, would they be buildings, urban or environmental transformation or even projects remained on the drawing boards. The second approach considers Design as a tool to investigate both cultural and physical environment around us. The approach may be put in relationship with Piagetian constructivism [1], believing in objectivity—constructs that can be validated through experimentation, or with the pragmatic constructivist point of view of G. B. Vico assuming that "The norm of the truth is to have made it".

A third epistemological model might be useful in trying to define the role of the architectural and urban design in contemporary agenda. This model considers the design process as an archaeological practice, as the tool able to reveal epistemic order embedded in the built environment or in the society, according to which reference frame we decide to focus on. This point of view follows the Foucault's model based on the archaeology of knowledge[2] extending its idea of investigation of human sciences through the structures (the order) of their archives, to Kittler's expansion of Foucault's principles to written documents, for us drawn documents. In this light Kittler assumes

that contemporary design can be seen as a machine, able to "recognize, encode and process for us and for itself, patterns of the environment, and to generate a new form of human consciousness of the non-human type"[3]. The project is then a process from real to imaginary through the symbolic stage very close to the Lacan's epistemological model[4]. In the frame of this conference, this paper aims to enquire unexplored relationships between teaching methods and studio topics, and the previous briefly described epistemic positions. Establishing possible correspondences between epistemological approaches to design and teaching models might helping in describing final goals of architectural learning programs, as well as design studio's themes and assignments.

Design studio teaching models: design as a logical process Considering design as a process that moves from premises to logical consequences, we can refer to Peirce's categorization identifying three different kinds of inferences, or logical processes[5]: deduction, induction and abduction. The deduction process derives logical conclusions from known premises. This is close to neo positivism paradigm explained in the first paragraph that considers the outcome of the project the result of the linear application of methods and techniques already well known and transmissible. In this light the teaching will start explaining and analysing those well-established methods and techniques and afterwards the students will be asked to apply them to a specific case study. In this frame the teaching of "classical themes", the "transferable skills of design practice", is the starting point of the studio, while contemporary challenges are the point of arrival of students work. The induction process moves from particular premises to the definition of general laws. This process is linked to a pragmatist approach of the project. This kind of vision will probably lead to a teaching method based on the observation of case studies, paradigmatic architectures, from which students can derive general principals of architectural and urban composition that they can then apply to their personal projects. This kind of pedagogy then will assume burning issues as the starting point of the teaching path, beginning with the analysis of contemporary agenda to end up with some generalizable concepts in terms of typological, compositional or technological skills. The abduction process proceeds from a single case study, or an innovative proposal, to formulate a new hypothesis, which is not yet a law or a rule, but just a possible principle to be further investigated, validated or fine-tuned. In architectural Design the closest approach to this kind of inference is related with archaeology of knowledge, the Kittler assumption stating that design is a sort of machine able to recognize and processing patterns, generating new innovative proposals. In this sense design is a tool of knowledge and therefore it can become a powerful teaching tool. Using design process such as typo morphological analysis and shape grammar student can be lead to start with design proposal strongly linked to the context patterns and its deep structure, translating it into a symbolic shape to end u with a total new imaginary configuration. Traveling through Lacan's triad of "real, symbolic and imaginary", the students will learn how to have a broader view on contemporary agenda issues, framing them in an historical perspective where typological, tectonic, technological and compositional skills are just part of the designers tools, helloing him to reveal the profound structure of the context.

The role of Architecture Schools: educating architects or pilots? The comparison of the three different epistemic approaches and their strong linkage with design teaching methods seems to highlight that traditional transferrable skill of the design practice and contemporary agenda burning issues are just two sides of the same medal that have to be kept together. The difference between the different points of view is about the role and the place that those elements are assigned in the schedule of the design pedagogy. The more radical difference between those schools of thought seems to be more about the role of the design itself in the pedagogical project: teaching how to design or teaching through design? But a broader question is raising up nowadays: are the school of architecture mainly aimed to educate architects or can we consider schools of architecture as a hotbed where to form citizens with specific abilities dealing with management of complexity, space's conception and creativity, a new generation of "kaospilots"[6]?   An ongoing survey launched by an EAAE's group of teachers and researchers is trying to ground a research proposal on a growing phenomenon in Europe: a relevant number of architecture graduates are not working in fields related with architecture. Does that mean that architecture market is saturated or that skills and approaches taught in schools of architecture are appreciated and even valued from other sectors of the labour market?

[1] Piaget, J., Psychology and Epistemology: Towards a Theory of Knowledge, Grossman, New York, 1971.
[2] Foucault, M., *L'archéologie du savoir*, Gallimard, Paris 1969.
[3] Kittler, F. A. "The World of the Symbolic—A World of the Machine". *Literature, Media, Information Systems: Friedrich A. Kittler Essays*. Ed. John Johnston. Amsterdam: Overseas Publishers Assocation, 1997. 130-146.
[4] Lacan, J., Séminaire 22 <<RSI >>, séance du 10 décembre 1974, STAFERLA, http://staferla.free.fr/, p. 11.
[5] Peirce, C.S., "The Logic of Science; Or, Induction and Hypothesis" [Lowell Lectures of 1866]. In: Peirce Edition Project, (eds).Writings of Charles S. Peirce: A Chronological Edition Vol. 1(pp. 358-504, Ch. 48).Bloomington: Indiana UniversityPress, 1866.
[6] https://www.kaospilot.dk/

A Proposal for the PhD in Architecture: Towards the "Nocturnal Sky," and Toggling Between Research and Practice
        Skender Luarasi, Yale University

If we accept the premise that architecture is an academic discipline in addition to being a professional one, then what is its object of study? What does it mean to know architecture? Does a practitioner who draws and designs know architecture better than an academic who writes in scientific journals, or vice versa? And if it is not a question of ranking, then what is the difference of their knowledge-s of architecture.   An absolute ideological certainty underlies all these questions insofar as they demand that we, the Subject-s, must necessarily agree on the possibility of knowing architecture as an object in the first place, beyond or apart from choosing one position or another. Yet, what if this absolute (or rather absolutist?) demand for epistemological interiority is itself impossible? What if it is absolutely contingent rather than absolutely necessary?

Contingent upon what? On an exterior, or in the words of Quentin Meillasoux, the "great outdoors."

In his "Prolegomena" Gottfried Semper appealed directly to the "great outdoors:" "The nocturnal sky shows glimmering nebulae among the splendid miracle of stars - either old extinct systems scattered throughout the universe, cosmic dust taking shape around a nucleus, or a condition in between destruction and regeneration." This "nocturnal sky" (or rather abyss?) stands for the constellation of technical and stylistic events in history and pre-history, a reality that always already predates us and structures our thought in history. For Semper, access to such impersonal reality occurs through "research and active, independent creativity," made possible through "direct intuitive thinking" mediated by technical "skills."

How does access to the great impersonal "outdoors" change in the age of Google? Is the latter that impersonal outdoors, or, perhaps, only a means to it? Is knowledge inevitably and forever collapsed and collapsable to information, or is there a gap between the two, one that persistently resonates like a late wave coming, but never actually arriving..., from an unknown world, a strange "outdoors?"

This paper proposes that the doctoral studies in architecture can and should address such questions, insofar as the PhD is uniquely poised to combine the three elements of Semper's formula: "research and active, independent creativity," "direct intuitive thinking" and technical "skills." This can happen, however, only on the condition that the PhD in architecture breaks with the so-called 'silo' syndrome, that is, the disciplinary separatism between specialized research on the one hand and practice on the other, and shift its attention, at least once in a while..., to the "great outdoors" outside.

The disciplinary 'siloing' of architecture has a long and dynamic history, with different protagonists, positions and arguments. Semper for instance, who was writing in the nineteenth century, was already reacting against it. Unlike Semper, Manfredo Tafuri, writing not so long ago, opted for the disciplinary siloing by authorizing a clear ideological and epistemological break between the historian of architecture and the architect-practitioner, and by categorically denouncing the practice of operative criticism, that impure and speculative 'weaving' of historical research and design practice. This break privileged the formation a critical self-reflexive circuit that presumed the architectural object to have actually died, thus surreptitiously rendering it as totally knowable and criticizable, and thus eventually blocking any door towards the "great outdoors."

We should reinvent operative criticism, by speculating, for instance, whether and how a PhD candidate, say, in History, Theory and Criticism, can also draw and 'deal' with compositions, not unlike Semper who employed erudite historical knowledge on the one hand, and drawing and geometrical skills on the other? How would these drawings orientate and take research through the limit and towards the "great outdoors?" If the researcher-historian writes about, say, proportions, can she also speculate not through words about drawing but actually through drawing about how proportions can be used in

design and architectural practice today, say, in the context of associative and parametric technologies, not unlike Semper who imaginatively reinterpreted the so-called 'traditional' categories of Eurhythmy, Symmetry, and Proportion? If an historian-researcher writes about geometry or typology, can s/he also speculate through that geometry or typology? How does such speculative practice individuate with research? From another disciplinary perspective, can a researcher in computation also adopt an historical approach to her research subject, and investigate how algorithmic-oriented architectures occurred in the past, how such intelligence persisted in history, and how it affects the present inquiries? For example, Bernard Cache is one of the few that combines geometry, computation and historical expertise. In the end, his work, though necessarily interdisciplinary, feels very disciplinarily focused and architecturally oriented. In Cache's recent book Toujours l'informe Albrecht Dürer suddenly feels very close to us, a contemporary friend striving to find finitude and meaning in the dawn of what would be later called 'modernity', premised on morphological variety, repetition, representation and reproduction.

How do we teach such approach in a PhD program in architecture? Essential to such pedagogical task is the class on Research and Methods, whose purpose is precisely to provide the student with research and speculative techniques in architecture. For example, Le Corbusier is an example of the architect-researcher who used different techniques in his work. In his Modulor, for instance, while dealing with the supposedly 'traditional' topic of proportion and golden section, he also used different geometrical and standardization techniques, anticipated certain parametric technologies with his zip-a-tone images, applied different rhetoric strategies in the construction of his argument, constructed narratives that combine fact and fiction, showed paintings and postcards, drew sketches, and in the end, invited us to find the Modulor in Ronchamp, one of the least modular buildings in history. In order, then, to study an architectural object like the Modulor, or Ronchamp for that matter, the PhD student in architecture must also be equipped with a similar arsenal of techniques that would empower her to carry through and shift among different modalities of research and practice, of research of design and design by research.

The syllabus of a Research and Methods class in a PhD Program in Architecture will be the object of this paper. What readings? In what order? What product? Just a final paper, or a paper with a drawing - a plan, section or sketch, or a collage, a script? Why not? Why not draw in order to anticipate, think, feel, imagine, prove or demonstrate one's hypothesis? Why should written word be considered more 'academic' and 'scientific' than a drawing, or a geometrical speculation? The syllabus then would be neither an historical survey nor a theoretical one, but rather one that surveys how different architectural research techniques have developed in history, and how others have studied architecture with these techniques in history.

Such close-reading of the architectural object, opens that object towards an outside that one had or could not have encountered before. As Maurice Merleau-Ponty writes in "Eye and Mind:" "In a sense everything that may have been said and will be said about the French Revolution has always been and will henceforth be within it, in that wave

arising from a roil of discrete facts, with its froth of the past and its crest of the future." Here the French Revolution is the object that will never be encapsulated definitively, under one methodological umbrella or one epistemological interiority, but is always open to time, to history. This "wave" is the "great outdoors."

The fundamental imperative of this paper then is not so much to synthesize, integrate or find a 'common' ground between research and practice, than to tease out a disposition to toggle between the two, a disposition that is as historical as it is technological, as much about the past as it is about the future, as much a premise as it is a promise. The path towards the "nocturnal sky" lies in between, in toggling. THIS TOGGLING IS THE HUNCH.

On Empathy and Intuition | Creative Practice in Service to Humanity
    Luben Dimcheff, Cornell University

Intuition [or the hunch] is critical to any Creative or Design Practice that concerns itself with how we live or how we ought to. Intuition is the ability to read clues and signals that are barely there - unarticulated, undefined, undetermined conditions that inform the many possible outcomes of a single line of inquiry. Where methodology and protocols stay predetermined and therefore result in a narrow range of answers, intuition forms within an oscillating continuum between reflections on past experiences, contemplation on the present and quite importantly - the anticipation of a set of futures, most notably: the right one. Intuition is the almost instant ability to set a course, without proof nor data, but rather - a deep reading of the context.

Intuition is not a whim. It is not a guess either... Yet it remains difficult to provoke on demand. It is often impossible to explain. In design however and in creative practices like architecture and art, it is a legitimate way to work; it is often the only way to work, as one projects a future, where none of us have been before. Intuition is also possible to cultivate. It ultimately stems from our willingness to be impressed [by even the most of the mundane] and our ability to empathize - to place ourselves within the other. Be it a person, a place or a thing, our capacity to empathize - to read the faint signals and foreign signs present in the context - informs the creative process and enables our intuition; it allows us to have that hunch.

As a practitioner of Architecture focused on habitation, an artist preoccupied with drawings that take years of feedback to complete, I practice and create intuitively; as a teacher in the First Year of Design I teach not so much by intuition, but rather methodically - I teach intuition.

My current Studio spans two semesters. The Fall - the initial semester of the 5-year Design Studio sequence, students are asked to observe, record, analyze and eventually synthesize the Four Elements of Nature - Earth, Water, Fire and Air - considered here as discrete forces as well as each a part of the dynamic system that establishes our most elemental context or Environment. Students produce elaborate representations of

each Element - not so much drawing them, but rather allowing the Elements to draw themselves. The elaborate, unexpected and altogether unfamiliar impressions or marks these forces leave behind, are interpreted [analyzed] and combined [synthesized] into new Environments. This process - more intuitive than rational - places each student in a position to consider and respond to entirely unique conditions The Human [Body] too is introduced into this system as an element that exists in a symbiotic state of codependency with Nature. Empathy becomes instilled and instrumental architectural notions such as enclosure or surface and structure, as well as experience or sequence, materiality and space are introduced and developed on the simple premise that Architecture is the interface between the Body and the Elements. Ecology - the intricate and finely balanced act of coexistence - previously assigned to technology course, to data graphs and metrics, is thus deliberately moved into the center of core design education. By means of continuous explorations and rigorous iterations, students use drawing as speculative way-finding and making as intuitive learning, to individually develop new methods between the two that are generative and capable to project intellectual, conceptual, architectonic and spatial propositions.

In the Spring - the second half of the 1st Year B.Arch Studio sequence is dedicated to the careful study of the Elements of Architecture and to building knowledge based on humans' continuous efforts to tame nature through Architecture and Engineering, to emulate and celebrate it and on a few occasions - to transcend the natural altogether and venture into the sublime.   Following the brave and fanciful emersion into Nature and its Four Elements in the Fall, we retract and reflect on some key and instrumental elements that define architecture and in return, allow architecture to shape our own experiences and the human existence.   "...The first sign of settlement and rest after the hunt, the battle, and wandering in the desert is today, as when the first men lost paradise, the setting up of the fireplace and the lighting of the reviving, warming, and food preparing flame. Around the hearth the first groups formed: around the hearth the first groups assembled; around it the first alliances formed; around it the first rude religious concepts were put into the customs of a cult... Throughout all phases of society the hearth formed that sacred focus around which took order and shape. It is the first and most important element of architecture. Around it were grouped the other three elements: the roof, the enclosure [the wall], and the mound. The protecting negations or defenders of the hearths flame against three hostile elements of nature. ..."
                    Die vier Elemente der Baukunst, Gottfried Semper 1851

Beyond the four proto-elements - the hearth, the roof, the wall and the mound, we consider a fundamental set of yet another four - elements as much as they are devices of architecture - the door, the window [also skylight], the column and the stair [ramp and bridge]. Evolved and well-tempered these latter four are in fact as aspirational as is the relentless human drive for light and lightness, divine heights and daring depths and of course for beauty.

 "...The wall did well for man. In its thickness and its strength, it protected man against destruction. But soon, the will to look out made man make a hole in the wall, and the wall was pained, and said, "What are you doing to me? I protected you; I made you feel

secure—and now you put a hole through me!" And man said, "But I see wonderful things, and I want to look out." And the wall felt very sad. Later man didn't just hack a hole through the wall, but made a discerning opening, one trimmed with fine stone, and he put a lintel over the opening. And soon the wall felt pretty well. ..."

<div align="right">Louis I. Kahn</div>

We create an encyclopedia of these elements, drawn from various critical practices of architecture, as well as vernacular, un-authorized acts of building, within a wide range of time, cultures and climates. These precedents - studied in their original contexts, as well as in relationship to the human body - will ultimately be understood as models: devices loaded with past knowledge and capable of informing projected futures. Methodically hybridized, the distilled elements are continuously reinterpreted, reconfigured and reformed until they become internalized and at the same time generative. Deployed in entirely new environments - equal parts real and fantastical - these models are made to adapt and evolve, specifically to respond to their context and generate tectonic forms and meaningful space: Elemental Architecture able to shelter the body and enlighten the mind.

The Teacher's Hunch and its Foundations: A Case for Epistemological Awareness in Architectural Education

Jorge Mejia, Delft Technical University

In this paper, a case will be made for the importance of epistemological awareness as both the source, but most importantly as the key required to unlock the potential contained in the architecture teacher's hunch. Epistemological awareness is here understood as the ability to recognize the underlying organized systems of ideas that inform, direct and define any architectural position or discussion. The case will be made in four steps.   The first of these steps is methodological, and provides a description of the cognitive nature of architecture, the different items that are involved in its performance, and the role which they play. As a cognitive discipline, architecture is responsible for the production, transmission and application of knowledge regarding the built environment. While the modern division of labor has allowed architects to focus specifically on one of these three responsibilities, education is still expected to be comprehensive, and therefore encompassing. To different degrees, university teachers of architecture remain simultaneously committed to research or the production of knowledge, teaching or transmission of that knowledge, and valorization or academic extension, which implies the application that knowledge in practice. When successful, these three activities constitute a virtuous circle, which contains the necessary checks and balances required for the growth and development of architectural knowledge. These checks and balances are essentially of two orders. On the one hand, and as noted before, they operate at a methodological level, and ensure that the instruments and methods used by architects to produce, transmit and apply their knowledge fall within a conventional definition of architecture (Lakatos, 1978; Anderson, 1984). On the other hand, they operate at an epistemological level, and benefit from the inscription of research, teaching and practice within organized systems of architectural ideas

(Wartofsky, 1968).   Based on, or channeled within the limits provided by these systems of ideas, architects can freely explore, evaluate and discover possible futures for the built environment. From an educational perspective, the architecture teacher's hunch, understood as a not-fully-justified decision or direction within an established course of action, is a productive instance of this freedom, for two distinct reasons. Firstly, because it recognizes the value of understanding, and not only knowledge, in every cognitive process (Huxley, 1955); and secondly because it sparks the necessary proliferation of ideas and possibilities that are necessary for the growth and development of knowledge (Feyerabend, 1968). So seen, hunches are indispensable to the cognitive discipline of architecture, but they are also reliant on sound methodological and clear epistemological foundations. As productive exceptions, hunches are inseparable from norms and make little sense on their own.   Noted earlier, the modern division of labor has allowed architects to specialize, and oftentimes disconnect the production, transmission and application of architectural knowledge from each other. This disconnection is not without consequence: it results in incomplete definitions of architecture, produces inoperative systems of architectural ideas, and in doing so dismantles the virtuous circle that allows architectural knowledge to grow and develop. In such circumstances, hunches can no longer be taken for productive instances of understanding and out-of-the-box thinking, but rather as instruments of superstition, used to sustain illusions of genius or originality. While definitions of architecture are habitually taken for granted, given their conventional nature, lack of awareness regarding the systems of ideas that underlie an architectural discussion curtails the productive role a teacher's hunch can play in that discussion.

Based on these premises, a second step in the development of the case will exemplify the lack of that awareness at work. Utilizing concrete examples, the paper will describe how the pursuit of knowledge, and the consolidation of research, teaching or design processes, are unable to profit from valuable insight contained in a hunch for sheer lack of epistemological awareness. On the other hand, it will examine cases in which the dismissal of the systems of ideas that underlie a discussion hamper constructive criticism, and favor incoherence and inconsistency, which are taken for geniality. A brief reflection on the power rationales that allow for incoherence and inconsistency to endure despite their unproductive nature will be advanced.

A third step in the development of the case will evaluate an academic experience that strives for epistemological awareness in research, teaching and practice simultaneously. It will be shown how that experience has been directed against the aforementioned modern division of labor and its noxious effects; and how it has partially succeeded in the promotion of epistemological awareness as a generator of virtuous circles that foster the growth and development of architectural knowledge.   A fourth and final step in the development of the case will provide a set of conclusions as possible lines for further action, as well as elements for the study the instruments and methods contained in hunches, intuition, and empathic relations among architects and students. The role of these instances in the development of architecture as a cognitive discipline that thrives on the productive articulation of research, practice and teaching will be clarified throughout the development of these four steps.

Notes:

Stanford Anderson, "Architectural Design as a System of Research Programs," Design Studies 5, No. 3 (July 1984)

Paul Feyerabend. "Outline of a Pluralistic Theory of Knowledge and Action," in Stanford Anderson (ed.). Planning for Diversity and Choice: Possible Futures and Their Relations to the Man-Controlled Environment (Cambridge, MA: MIT Press, 1968) 275 - 284

Aldous Huxley, "Knowledge and Understanding," lecture given in the Vedanta Society of Southern California, https://vedanta.org/2002/monthly-readings/knowledge-and-understanding-part-1/, https://vedanta.org/2002/monthly-readings/knowledge-and-understanding-part-2/, and https://vedanta.org/2002/monthly-readings/knowledge-and-understanding-part-3/, retrieved 02/15/2019

Imre Lakatos. The Methodology of Scientific Research Programs, Philosophical Papers Volume 1 (Cambridge: Cambridge University Press, 1978)

Marx Wartofsky. "Telos and Technique: Models as Modes of Action," in Stanford Anderson (ed.). Planning for Diversity and Choice: Possible Futures and Their Relations to the Man-Controlled Environment (Cambridge, MA: MIT Press, 1968) 259 - 274

Incubating HUNCHES about Pressing Issues into Academia I

Friday, March 29, 2019
9:00-10:30

Twin Labyrinths: practice and academia
    Frank Weiner, Virginia Tech

Introduction: the rise of academical practice
This paper argues for a vigorous re-enchantment of the correlates of academia and practice. There are now a few generations of practitioners educated in schools that inculcated a form of practice best described as academical. Venturi's *Complexity and Contradiction* (1966) set one standard for such work. One thinks also of the influence of Colin Rowe at Cornell, and later Rem Koolhaas at Harvard. There are many others such as the "Texas Rangers" and the "New York Five". By the term academical is meant formal/intellectual/speculative/ideal projects done under the auspices of the academy. These noteworthy academic projects most properly belong on paper and the destiny of these projects is not to become built works of architecture. They are more about making or educating an architect than making a building.   Visits to recently completed museums designed by noted architects sparked the following observation - the architects appeared to be acting in the modes of excellent students. The typology of the contemporary art museum with its emphasis on structural, spatial and material novelty may serve to heighten this exuberance. This is not intended as a criticism of the work of particular architects but rather an acknowledgement that we may have unwittingly prolonged the life of a student deep into the period of professional practice without realizing the negative consequences to both the development of practice and academia. This unintended stretching of a student tends to lessen the capacity of architects to fully mature towards the masterly refinement of built work over the life of an architect. This situation calls for clarifying and deepening the foundations of practice and academia and their relationship to each other so as not to lessen the efficacy of either. Practice should not become academical anymore then the academical should mimic practice.

Towards a philosophy of practical practice: Along with the rise of academical practice in the profession there has been an increase in many forms of 'practice-based' activities in schools. Given such dramatic reversals the lines between and the relationship of the ideas of theory and practice are in need of clarification. It is important to better understand the ancient composite we somewhat lazily conjoin as 'theory and practice'. For Hans-Georg Gadamer his idea of "practical philosophy" places the propositional (theory) and the decisive (practice) side by side as intertwined correlates. We live a life in Arendt's sense simultaneously consisting of both the quiet of contemplation and the unquiet of the political.

The doctor cures, the lawyer defends and the architect acts through making. There are no claims to universality in these practicing actions making the teaching of these professions quite complex. However the legitimacy of those practicing medicine, law and architecture is based upon an idea of practical wisdom known as phrónēsis. This wisdom leads to practical decisions pertaining to what is good in certain situations. These decisions may be otherwise but still occur within an idea of reason. There is a tendency to believe given this lack of universality theory holds a superior position to practice. For Gadamer both theory and practice are supreme forms of reason. Practice is a form of practical reason about what is good or what he calls " the right thing to do". This is very different from the search for immutability theory seeks. The 'bliss of theory' grazes up against the hard edges of practice. Theory and practice are not oppositions but rather in Gadamer's sense contrasts within knowledge. Arendt would term the former quiet and the latter unquiet. The aim of practical philosophy is practice. Gadamer writes; "... in the sphere of practice the conclusion is not a proposition (Schluss) but a decision (Entschluss)." The realm of practice in architecture is an ethical realm where decisions have consequences. There is no practice outside of an ethos of lived decision. It is this ethos the practitioner practices.

The Banality of Bureaucracy: The growth of bureaucracy at many Universities coupled with increases in pressures applied by external accreditation entities upon professional programs in architecture have tended to further weaken the possibility of studios firmly based on academic and intellectual principles. The banality of a burgeoning bureaucracy can have deleterious impacts on academic pursuits. In addition to these pressures those teaching studio are increasingly encouraged to more directly respond (through their teaching and research) to addressing pressing social and global concerns along with larger scale initiatives adopted by their particular institutions. Such institutional initiatives may or may not be conducive to academical work in architecture and may serve as significant distractions to that end.   Learning from Leibniz: the best of all possible studios?   In the preface to Leibniz's T*heodicy* published in 1710 he distinguishes between what he calls two great labyrinths where reason looses its sway - one is practical and the other theoretical or speculative. Under the rubric of the practical is the question of how evil necessarily arises in the lives of human beings. The question of continuity and how indivisibles arise falls under the theoretical. The practical question gives rise to theodicy (the justice of God) and the theoretical to his theory of indivisible monads. The Theodicy famously states this world is 'the best among all possible worlds' since God would have not done otherwise. The argument is theological and faith grounds its rationality. The reception of his supra-rational philosophy was rejected from many quarters, most notably, by Voltaire's evident sarcasm in his *Candide* and the *Poem Upon the Lisbon Disaster*.   The great Lisbon Earthquake of 1755 provided a common sense example showing evil strikes suddenly (without reason) and makes us feel this is indeed the worst of all actual worlds. As in Leibniz's time and today our patience for metaphysical matters remains weak. Invoking metaphysics has become synonymous with "...a body of wild and meaningless assertions resting on spurious argument." Leibniz's point is evil does indeed exist but this alone is no reason to loose faith in the overwhelming goodness of the created world in which evil makes its exceptional appearance. In the constant face of the provisional, contingent and the

flaring up of evil one of the only recourses available is searching for a necessary rational order amidst overwhelmingly stochastic conditions. This was the core of Leibniz's *Theodicy* and one that could inform our notions of an academic studio.

A series of questions arise viewing the state of our academic design studios today through the rational lens offered by Leibniz:

Should our studios respond to surrounding contingencies/circumstances or should they seek harbor in search of more stable incorruptible ground?
Should the best of all possible studios be a rational studio (if this were at all possible)?
Should the pursuit of the best (either for a teacher or student) be the purpose of a studio?

Can the idea of theodicy (meaning literally the justice of God) be analogous to the construction of a just or jussive pedagogy of the studio? Such a jussive mood would suggest both teacher and student have wishes, obligations, responsibilities and duties to respond to the call of architecture. Here one seeks a secular authority grounding the best bracketed from theism - a kind of secular theodicy. For something to be best it must have virtue in a world. The virtue of the studio would be the ethical search for the best in both given exercises and the responses to those exercises. Faculty formulations with no virtue cannot lead to student responses with virtue. The best of all possible studios would be framed by questions about the possibility of practicing perfection realizing full well imperfect things will result. Peter Sloterdijk reminds us there is a vestige of the *summun bonum*(highest good) within us allowing us to practice fateful imperfection. The studio would be a refuge cultivating academic entelechy (the actualization of a purposive inwardness) of the individual expressed in one's work. Re-Attuning the Academic Studio: moods and modes   As studios are tending and trending towards projects of contemporary relevance and application we move into a circumstance of contingency rather than a situation of necessity. We ask our students to investigate the problems of the day such as global warming, social justice and social equity. The demand for offering projects in 'spirit of the times' can overtake and negate possibility for having the necessary leisure (in Josef Pieper's sense) to seek ideas of great duration in architecture. In an effort to prepare students they can unwittingly become through our pedagogical decisions ethically unprepared for what may come in the world of practice. The world of the studio should assist students to become more intellectually attuned to the necessity of practical wisdom grounding the best possible acts of poesis. We should guide students towards the future practice of poesis and techne. This effort strives for finding the best dialectic of nascent theoretical propositions and the wisdom inherent in refined practical decisions. This endeavor requires moods and modes of ensouled action to find one's way into the twin overlapping labyrinths of the education of an architect and ultimately the practice of architecture.

Breaking Good: A Note on Research in the Practice of Charles and Ray Eames
Daniel Friedman, University of Hawaii at Manoa

Q: What are the boundaries of design?
A: What are the boundaries of problems?
—Charles and Ray Eames, *Design Q&A*[1]

While serving as Harvard University's 1970-71 Charles Eliot Norton Professor of Poetry, Charles Eames delivered a lecture entitled *Goods*, the video adaptation of which can be found in Volume Four of *The Films of Charles & Ray Eames*.[2] Although Eames calls the topic of this lecture "the new covetables," the seven goods he presents are old, even antique.The video as published runs six minutes—875 words, none of them "design."[3] This paper explores novel qualities of the Eames's office ethos through a close-grained reading of "Goods" and a companion film, "Design Q&A," which illuminate prescient and underexamined models of practice—problem-driven, research-based, integrated, and interdisciplinary—deeply releveant to the questions shaping twenty-first century academic and professional cultures.

Eames opens *Goods* with a story about a thief who breaks into Ray's car. The thief leaves Ray's possessions strewn all over the parking lot next to their Los Angeles office. Eames describes this late-night crime scene with an air of disbelief, since the thief ignores almost everything of any notable value, in particular a bolt of cloth, the kind "[that] when you take hold of it, why, you can feel the animal wax and oil in it—a great bolt of cloth." Eames can't believe "the [thief] hadn't thought enough of it to steal it."   A bolt of cloth "comes under the heading of 'goods,'" Eames explains. "People lay great store in [goods]," he says—goods give people a feeling of "tremendous security." He conjures up the Manly party crossing Death Valley in 1849 en route to California. Anticipating hostile encounters, the settlers don every inch of fabric they own, to protect their inventory. Eames segues to comparable goods—"a reel of line," "a ball of twine," "a keg of nails," "reams of paper," "boxes of chalk," "a cord of wood." Much of this typology suggests modes of distribution and consumption long-since eclipsed by newer, more efficient business models.

Eames seems deeply moved by these older modalities of scale, volume, and distribution—bulk goods, storage, the continuityof container and content (bolt, ball, box, reel, keg, ream). He seems focused on the role wholesale packaging plays in the life of goods, from manufacture to retail sale and application. What he discovers in this flow is a kind of necessary deconstruction, a "breaking into" that disrupts intermediate spatial orders and their various processual forms, at the same time as it reveals the character of products and materials and their transformation by use(nails, chalk, twine, rope, fabric). To underscore his point, Eames extols the pleasure of tearing the wrapper off a fresh ream of paper, to which he adds, "...what you do with [it] can never quite come up to what [it] offers in itself."[4]

 Eames ends his homage to old-fashioned goods with common firewood, chopped, split, and stacked for burning, one of our oldest sources of energy and social continuity—both fuel and frame, practical and cosmogonic. The final sentence of Eames's talk swerves into a note on the fate of all goods. He brings our attention to"...that moment when

somebody first eat[s] into the cord of wood, the first one to take the piece out, and it would start to tumble, and before you knew it, the cord of wood was gone." This last image lingers in the mind like a fading bell, resonant with the one truth all phenomena have in common—impermanence, entropy, whether from larceny or thermodynamic law. Eames intimates a deeper structure of reality, notable for its congruence with the last words of Shakyamuni Buddha, circa 400 BCE: "All created things have the nature of destruction."[5]

Eames implies that to understand value designers must "break into" the systems that generate it. His folksy tone belies seriousness of purpose. He and Ray "break into" the problem they're analyzing in order to survey its interior boundaries. Rather than lament lost authenticity or eulogize lost craft, Eames parades the virtue of "found goods," in particular their material economy, suitability to context, and unselfconscious harmony of parts. Tacit understanding drives the Eames's exploration of tacit beauty.[6] Their interest in the relation between part and whole radically departs from its classical antecedent, Alberti's ideal composition—to which "nothing may be added, taken away, or altered, but for the worse"—which they regard as a static gestalt.[7] With *Goods*, the Eameses reveal new beauty in the dynamic properties of old manufacture and use, as a way of engaging contemporary expressions of the same flux: systems, processes, thresholds, fields, boundaries, hybridity, economy, and the ecologies of production and consumption.[8]

The practice of Charles and Ray Eames blossomed in the early 1940s, following their now-famous experimentation with molded plywood. Like Le Corbusier, Louis Kahn, Alvar Aalto, and their close friend and colleague Eero Saarinen, the Eameses sought to reconcile the conflict between standards and standardization.[9] For the Eameses, practice equals ethics. Ethics comes to life in their optimization of form within a circumference delimited not by profit, connoisseurship, or brand so much as the skillfully contextual integration of technology and analogy. The vestige of this research inhabits all their work, much of it still in production, although nowadays the Eames name populates a class of products well beyond the reach of average households.[10]

With *Goods*, Eames delivers less a lecture than a summa of his and Ray's philosophy of practice. Their research, often expressed in films and animations—most directly perhaps in the film interview "Design Q&A"—consistently addresses certain underlying themes: making and manufacture; change; the inseparability of environment and experience; design as epistemology. Their work ignores the territorialization of scale we use to delimit and regulate professional jurisdictions. They're never not thinking about use, material, and performance. The resulting corpus flows from this ceaseless inquiry. Charles and Ray Eames begin their careers teachingat Cranbrook. As their practice evolves, they increasingly employ research to navigate the flows and velocities of capital, neither antagonizing it over its defects (e.g., the plague of inequality) nor suffering its indifference to access and equity. Rather, they systematically—and systemically—break into capital itself, curious about new ways to recombine and deploy its constitutive elements. By the example of their practice and the ease with which it integrates elements of both research and pedagogy into its eclectic methodologies, we

may well discover fresh modes of inquiry that ensure we never mistake the design of the good for the good of design.

[1] Charles Eames, *Design Q&A*, in *The Films of Charles and Ray Eames* (1972; Los Angeles: Eames Office, 1993), DVD.
[2] "From a three screen slide show made for a lecture on The New Covetables given by Charles Eames during his tenure as the Charles Eliot Norton Professor of Poetry at Harvard, 1970-71." Charles Eames, *Goods*, in *The Films of Charles and Ray Eames* (1971; Los Angeles: Eames Office, 1993), DVD.
[3] An approximate word count based on the author's own transcription of the film, which deletes duplicated words and exclamations.
[4] Ibid.
[5] Robert A.F. Thurman, *Essential Tibetan Buddhism* (New York: Harper Collins, 1995), 93.
[6] On "tacit knowledge," see Michael Polanyi,*The Tacit Dimension* (Chicago: The University of Chicago Press, 1966, 2009), 3-25; see also Mark T. Mitchell, Michael Polanyi (Wilmington, Delaware: ISI Books, 2006), 59-103. My thanks to Billie Faircloth for pointing out this literature.
[7] On classical beauty, see Joseph Rykwert and Robert Tavernor, "Glossary" [s.v. "Beauty and ornament/pulchritudo et ornamentum"], in *Leon Battista Alberti, On the Art of Building in Ten Books*, ed. and trans. J. Rykwert and R. Tavernor (Cambridge: MIT Press, 1988),420-21.
[8] I use the term "economy" and "ecology" here in the strict sense of their shared root, from the Greek *oikos*, "house, dwelling"—respectively, "house[hold] management" and "the study of the house[hold] of nature."
[9] See for example Le Corbusier, *Towards a New Architecture*, trans. F. Etchells (New York: Holt Rinehart and Winston, 1960), 124-25; and Louis I. Kahn, "'Standards' versus Essential Space: Comments on Unit Plans for War Housing," in L.I. Kahn, *Louis I. Kahn: Writing, Letters, Interviews*, ed. A. Latour (New York: Rizzoli, 1991), 14-17.
[10] In continuous production since 1956, the classic Eames Lounge Chair and Ottoman currently retails for $5,295 at Herman Miller, its manufacturer. See http://store.hermanmiller.com/living/lounge-chairs-and-ottomans/eames-lounge-chair-and-ottoman/100077567.html?lang=en_US&mrkgcl=583&mrkgadid=3200073475&adpos=1o4&creative=177738782085&device=c&matchtype=&network=g&gclid=EAIaIQobChMIu8D_tJTa3wIVCtVkCh3qlAR1EAQYBCABEgLryPD_BwE>, accessed December 31, 2018.

Practical Theorization vs Theoretical Practice in OMA/AMO

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This text analyzes the role of theorization in the current architectural practice. Apparently, there is a disengagement of practicing architects from scholarship profiles. We might find only a few examples of renown architects that include theory in their architectural practice, being Rem Koolhaas one remarkable exception. He retrieves the tradition of pragmatic theorizing developed in the past by figures such as Le Corbusier. His design methodology requires theorizing and translating the conclusions into practice. This system includes a systematic recording of every document developed in the process, in an almost compulsive manner. OMA became aware of the importance of documenting the design processes and to register their practical and theoretical activity, both for internal use and for external dissemination. OMA's Archive started as a casual and chaotic storage room close to the kitchen, at the office, but since the year 2000, it became a fundamental tool and a constant referential resource.

This "intellectual management of communications" was also in the origin of the creation of the "think tank" AMO (OMA's nemesis). In 1999, Dan Wood and Rem Koolhaas decided to establish AMO, as a parallel and independent entity from OMA, that could focus on pure theoretical subjects, regardless a previous commission or any engagement to the conditions of the market. AMO could be engaged in speculative research and pure experimentation, so that its agenda would be shaped with internal interests in mind, and not external events. Free from the imperative weight of building the architectural object, it is possible to find efficient and accurate solutions, with faster and more flexible means. OMA's website explains this dichotomy as follows:

> *"While OMA remains dedicated to the realization of buildings and master plans, AMO operates in areas beyond the traditional boundaries of architecture, including media, politics, sociology, renewable energy, technology, fashion, curating, publishing, and graphic design. AMO often works in parallel with OMA's clients to fertilize architecture with intelligence from this array of disciplines."*

In conclusion, AMO allows OMA to wean their intellectual concerns from the need to build, turning to purely speculative and theoretical experimenting lines. This tool enables the coexistence and interaction of theory and practice, escaping from the fleetingness of globalization. This gap between the theoretical and the practical activity in architecture is perfectly reflected in Koolhaas's article "Thinking and Doing" (Content, 2004), where he makes a curious comparison between the manifestos addressed in the Twentieth Century and the urban development in the World. The analysis of those data lead to very important conclusions. First, the architectural theorization has been developed basically in Europe and North America whereas the most intense and important urban developments of the last years have been undertaken in Asia. Secondly, the researching and theoretical activity has declined radically since 1970, whereas the urban activity has exponentially increased since that date. He considers that "Complexity and Contradiction in Architecture" (Robert Venturi, 1966) was the last manifesto on architecture, and since then, only some referential books have emerged on urban space.

He claims that the architectural theory has been abandoned by practitioners. In his opinion, theory has been cloistered in Architecture Schools, whereas Architectural Offices tend to stack practice. In his opinion, Venturi's manifesto opened a "space for a possible architecture" beyond the Modern Movement. He made this statement in the context of an interview that he and Hans U. Obrist made to Robert Venturi and Denise Scott Brown, to celebrate the 30 years of the publication of "Learning from Las Vegas" (1972). In that text, Venturi explains that the Modern Movement stripped the architecture of its communicative essence and had a significant influence on the architecture of the 20th century, which generated a "burnt land" scenario. He considers that, since then, there has been no in-depth reflection on the processes, media and content for which the built environment can issue information to the user, nor on the mental processes that provide information to the image that develops a building, or the implications of such perception in that image's construction. He concludes that the architecture's mechanisms of representation have not been explicitly analyzed since the

Modern Movement and argues that it is necessary to review that approach, understanding the double condition of architectural communication: the built element and the architectural narrative. This reflection can be applied to the architectural theorization, whose revitalization went hand in hand with radical post-modern movement and groups (such as Archigram, Superstudio or the Situationists) with a less practical component. Progressively, it led to the cloistering of theorization in the Schools of Architecture and to the exacerbation of the gap between practicing architects and scholar profiles. At present, there is a clear divergence between theory and practice in architecture. Theorization has been confined in Universities and Schools of Architecture, that have also abandoned the architectural practice or the practical research, in many cases due to a lack of resources. At the same time, studios working in architectural "production", have not developed the necessary theoretical processes that could support their activity, as they are usually immersed in a frenetic activity and there is not any remaining time for reflection on theoretical subjects.

However, OMA follows a diametrically different pattern. There is an almost compulsive obsession with the production of publications, recording and documentation of processes and ideas, OMA is said to issue a publication per day. In many cases, it is rather an internal record that helps to assimilate the ideas, while inventorying them. Most part of the office's work does not reach the client and passes on to the archive, which is constantly revisited in order to bring light into new designs (to address strategies such as "self-recycling", one of OMA's favorite design formulas). One of AMO's first achievement was the insertion of theory in the design and communicative strategy of OMA. This subject is playing a decisive role in the current development of architecture, with a growing influence in the early stages of the project or the theoretical developments. The inclusion of the record as part of both the design process and the researching process, allows an exponential growth of experimentation and creativity in both disciples and enables the positive data interchange. Gregory Bateson suggests in "Steps to an Ecology of Mind" that the essence of communication is the creation of redundancy or an apprehended pattern that adds a degree of predictability to the message. Therefore, the goal is no to decode a message through a language, but he suggests that the representation consists in the creation of a context that is capable to generate partial and fragmented interpretations that expand the object's perspective. In other words, the creation of a specific graphic language that codified the data collected would improve its interchanging capability in an exponential way. The confluence of these two concepts would provide an enhanced view of the discipline and would allow to revisit its past from an additive view, generating multiple visions of what is already known and implementing architectural research creative possibilities.

The concept of "visualization" of information leads us once again to Rem Koolhaas. As it is well known, he is one of the biggest communicators of our time; his figure and his influence goes beyond the purely architectural atmosphere. In his studio OMA-AMO, the representation of architecture has plunged into the creative process, both practical or theoretical. The communicative strategy acquires the same importance as the message that is intended to convey, because it has the potential to strengthen it and even transform it. This is what Rem Koolhaas calls "information design". There is a "bijective

exchange": Communication-Design. It generates an exchange of variables, an intellectual permutation that indistinctly benefits both parameters. Therefore, as our perception of reality is based on its representation, that means that information and visibility are a whole. That leads to the necessary convergence between the story to be told and the way to do it, between the concept and the communicative strategy, both in the case of architectural practice and theorization.

Try Something New: Speculations on an 'Expanded Practitioner Model' of Practice-Based Research

Andrew Burns, Andrew Burns Architecture

Whether to adopt an inward or outward focus - this is a fundamental question within practice-based research. What are the relative merits and limitations of a process grounded in inward focus; reflecting on the practice's pre-existing approach to deepen that approach, compared to an outward focus; exploring an area of knowledge not encountered in business-as-usual practice work but anticipated to be fruitful and integrating with the pre-existing approach? This paper will outline a current practice-based design PhD being undertaken by the author at the University of Sydney, simultaneously developing a tentative model of practice-based research whilst enacting that model. The author identifies as a novice researcher / expert practitioner, operating in a manner outlined by Laurene Vaughan that seeks to 'negotiate a new terrain of practice (the university) while continuing to engage with their everyday place of practice as the site of their doctoral enquiry'.[i]

The emerging model of practice-based research being developed, provisionally named the 'expanded practitioner model', contrasts to established 'reflective practitioner models' as exemplified by the RMIT practice research program, in which processes of 'instantiated reflection'[ii] and 'public behaviours'[iii] provide a framework to increase the critical capacity of the practitioner to propel the practice work forward and yield discoveries. By contrast, according to the expanded practitioner model, capacity for the practitioner to reflect on their practice to an adequate level, comprehensively articulating the mechanics of the design process and explicitly locating the work within a community of practitioners, is proposed as a pre-condition of entry to the program. A 'statement of design approach'[iv] is proposed as a key submission for entry to the program, outlining the pre-existing understanding in detail, forming a base to compare inevitable shifts in the practice approach at the conclusion of the PhD.

The expanded practitioner model seeks to create a space of discovery in a contrasting manner to reflective practitioner models, as it is proposed that the practitioner / researcher speculate on a territory of knowledge either not encountered or not thoroughly explored during business-as-usual practice work, but anticipated to be fruitful and able to be clearly linked to the pre-existing practice approach. In order to affirm conventional values of qualitative research, the expanded territory is proposed to be explored initially in a non-project applied manner according to standards of scholarly research, situating the area of knowledge via literature review and generating a concise

'focus paper' that bounds the territory and frames key questions forming a gateway to the project applied phase of the research. The affirmation of a conventional mode of research serves to strengthen the bridge between practice and university, enabling foundations of the academic skill set to be transferred to the practitioner / researcher and familiarizing them with the expectations and protocols of scholarly research.[v]

Following endorsement of the focus paper, the knowledge generated is applied to a series of projects in an initial phase of 'divergent application'. During this phase, emphasis is placed on comprehensively exploring the new territory, in a manner which suspends integration with pre-existing practice knowledge in order to avoid biasing the exploration and pre-empting discovery by the heavy imposition of established approaches. Competitions, theoretical projects, EOIs are positioned as useful opportunities for application, importantly sidestepping client imperatives, which can further impose expectations of continuity with established approaches. If undertaken in a committed manner of divergence, projects undertaken during this phase may not feel to the practitioner / researcher to be representative of the practice approach, and it is proposed that this disassociation be *freeing*.

Following the initial phase of divergent application, a secondary phase of 'coalescent application' is undertaken, extending the insights gained during the divergent phase to generate a second suite of projects, but deliberately integrating these with the pre-existing practice approach to form continuities with both the established practice approach and the expanded territory. The process of integration raises many questions, illuminating valuable aspects of the practice approach that may have been temporarily backgrounded, energizing these through location within a broadened territory and harnessing the new approaches to longer continuities of the practice. Projects undertaken during this phase may remain in the speculative mode of competitions and theoretical projects, but may also be able to be appropriately applied to commissions, given the deliberate continuity with established approaches. At the completion of this phase of coalescence, the practitioner / researcher should be able to articulate the pre-existing practice approach, the expanded practice approach and the shifts between the two.

The process enacted has focused on concept generation at the interface of architecture and landscape, building upon a pre-existing practice approach that pursued concise architectural forms in landscape settings in a manner that sought to extend lineages of abstracted vernacular approaches in Australian architecture.[vi] In order to expand the concept base of the practice, a series of matrices were generated, classifying, transforming and hybridizing concepts (by the practice and by others) at the interface of architecture and landscape, informed by morphological matrices and systematic rationale tracking processes as developed in the 1970s Design Methods movement[vii]. During this process, tendencies towards abstracted vernacular and concerns for precise materiality were backgrounded, enabling a more radical base of concepts to emerge. During the divergent application phase, a series of projects have been generated including the Barilla Pavilion open competition[viii] submission and Al-Ula Desert Resort invited competition submission, the Barilla pavilion concept exploring a hybridisation of

a pathway configuration with field conditions, whilst the Al-Ula concept explored a 'canyon scheme', subtracting an abstracted geological formation from earthen mass to create shaded passageways and common spaces[ix]. The coalescent application phase has recently commenced, including a competition submission and a significant residential commission for Japanese developer Sekisui House.

Key insights gained to date within the focus area of concept generation include the capacity for concept hybridisiation to solve complex design projects in a manner which does not dilute concept clarity but rather creates increased specificity; the value of creating a space of concept exploration separate to projects, enabling an intensification of the concept base by avoiding buttresses of client, site and program; and the introduction of synthesis as a secondary process subsequent to hybridisation. Moreover, an overarching insight is for the potential of systematic processes to enable shifts in intuitive impulses. If we accept the Dreyfus brothers' model of multi-staged skill acquisition, a technique that may be characteristic of a lower order advanced beginner (systematic matrice process) is utilized to shift the higher order intuitive processes characteristic of an expert designer towards new possibilities,[x] and through this serves to generate new knowledge. This deliberate cycling through higher and lower order skills may offer useful mechanisms for design teaching.

The paper will explore the expanded practitioner model in contrast to reflective practitioner models and will frame a series of questions arising:
- What are the relative merits of an inward and outward focus in practice-based research?
- Can an outward focused process that deliberately expands the knowledge base of the practice result in increased depth of understanding, or will it simply increase breadth (and conversely reduce depth)?
- Is a process of divergence / coalescence productive as a mechanism for generation of new knowledge?

[i] Laurene Vaughan, 'Designer / Practitioner / Researcher', in Laurene Vaughan. (ed.), *Practice* based design research, New York, Bloomsbury Academic, 2017, p12.
[ii] Richard Blythe and Leon van Schaik, 'What if Design Practice Matters', in *Design Research in Architecture: An Overview*, ed. by Murray Fraser, Farnham, Ashgate, 2014, p61.
[iii] Leon van Schaik, 'The Design Practice Research Model of ADAPT-r', in *Adapt-r* (exhibition catalogue), University of Westminster, London, 2016, p25.
[iv] The 'Statement of Design Approach' outlines the practice approach at the commencement of the research, locating the practice work relative to other practices, identifying key milestones in the formation of the practice approach and outlining the mechanics and techniques of the design approach.
[v] This frankly recognizes a need for academic training of the expert practitioner / novice researcher. Notably, although not treated in this paper, is an accompanying need for training of the academic supervisor in the provisional realities of practice; obligation to client, protection of income sources, cost and program pressures that can create a tendency to repeat design strategies.
[vi] Refer to photographs of a series of projects undertaken prior to the research - a gallery in rural Japan, hiking lodges on the Tasman Peninsula, a remote school campus in NSW and a pavilion installation at a Sydney art gallery.
[vii] John Chris Jones, *Design Methods: Seeds of Human Futures*, London: Wiley-Interscience, 1970.
[viii] Refer to rendering of Barilla Pavilion opeb competition submission, 2018.
[ix] Refer to rendering of Al-Ula Desert Resort invited competition submission, 2018.

[x] Hubert Dreyfus and Stuart Dreyfus, *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer*, New York, The Free Press, 1986, p22.

Critical Bridge: Learning Practice / Teaching Practice
Jonathan Rule, University of Michigan

"Leading practitioners and design thinkers are associated with academic institutions. This connection to teaching represents a critical bridge that endows the academy with an experimental and investigative validity while providing the ever renewing energy, experimentation, and inquiry that feeds and validates a professional office."[1]

In this statement, Borden describes the connection between the 'practice of architecture' and the 'practice of teaching'. The relationship between these two poles produce a symbiosis with one learning from and teaching the other. The academy is validated through the accountability of the profession while at the same time the profession is nourished through the curious and investigative environment that only the academy can provide. In this sense the transfer of knowledge between the profession and learning environment doesn't establish a continuum where one underpins the other, instead it establishes an informal system of checks and balances where one needs the other and vice versa to thrive.

Within this context the two poles can be defined as such. Professional practice is primarily seen as a service-based profession that wrestles with the pressures of societal demands that influence its outcomes whether they be in the form of research or a product/commodity. Practice is the point of translation of ideation to reality, a process dominated by pragmatics and constraints. This act of translation and acceptance, in some respects, is the validation of disciplinary experimentation and speculation that is undertaken in either the profession or academy.

Academy, on the other hand has the option of freeing itself of societal demands and pragmatic constraints, and serves as the guardian of the disciplinary calling which separates architecture from building. The design studio is a place where knowledge in generated in a diverse, equitable and inclusive manner. However, this freedom can be seen in two ways. On the one hand some view the work produced in an academic environment lacking rigor and not grounded in reality. These views lead to a questioning of its validity and the beneficial implications that it might have on the betterment of the profession and society at large. On the other hand, this unbridled freedom allows for the questioning of the status quo by providing a space for breaking the mold and discovering new approaches to design.

Using the aforementioned definitions as framework for characterizing the practice and the academy, this paper looks to analyze the responsibility of these two poles and understand their synergies through a case study of an ongoing design studio now in its third year. The studio titled "A City For All" establishes a methodology of working where students are learning to practice while at the same time they are teaching practice through the close relationship between the university and the planning department of

the City of Detroit. Learning Practice - Systems Studio   The design studio, known more broadly as 'systems studio' educates students through a comprehensive approach to building design with a specific focus on new models for housing in Detroit. The studio goes beyond conceptualization of form and space by addressing the many complex layers that are included in the development of an architectural project, including: code analysis, urban design, structures, passive and active building systems, etc. The studio is interested in the understanding of these more pragmatic requirements and thinking of them less as constraints and more as opportunities to develop inquisitive propositions and generate content to expand the conversation on housing. This discourse and the questioning of the status quo becomes the academies contribution to teaching practice new ways of thinking about housing. As a way to negotiate some of the pragmatic barriers that place limitations on professional practice, both the city and the studio have adapted a methodology of working through Form-Based Code. Form-Based Code in comparison the conventional zoning, allows for a more flexible framework where the experimentation found in the academy can be more easily adapted to a regulating plan that designates the appropriate development of an area of the city.[2] It provides a grey zone where research results do not have to fit a preexisting mold and can be more easily applied and implemented.

Within this framework, the studio 'New Domesticities, New Collectivities' tries to break from the historical arrangement and configuration of plans, within the context of domestic space which most often reveals tight allotments of square footage and compartmentalization of spaces with inherent naming conventions that imply single use, inflexible scenarios of inhabitation: Living Room, Kitchen, Bedroom, etc. Instead the studio explores continually changing scenarios of how we live, work and play. The nuclear family, which dominated housing design of the 20th century, is disappearing. Replaced by diverse typologies of post-familial living arrangements, various forms of collectives, and new ways of combining dwelling and working, these new groups require a rethinking of what housing can be. This paradigmatic shift questions the status quo of what constitutes a home, how the private and the shared are partitioned, and what new kinds of spatial uses are necessary. In response to these new domesticities, the studio explores the development of alternative forms of housing for emergent forms of living and working in Detroit.   Teaching Practice - Detroit Design 139 Detroit in recent years has become a burgeoning city for redevelopment. The cities almost table rasa condition has afforded an uncharacteristic approach to its rebuilding. Leveraging the city's history of evolutionary design interventions, form-based code and rethinking the way the cities should be designed has created an experimental platform for testing out new ideas. However, within this open approach to rebuilding, there is still a resistance to doing things differently. This is where role of the academy becomes the influencer and is used to teach practice and real-world developers by contributing speculative examples to the biannual exposition "Detroit Design 139". The exhibition is a display of both real and speculative design work positioned side by side to illustrate the future potential of Detroit. There is a focus on the improvement of the quality of life of Detroiters which can be seen through the development of alternative approaches for domestic space and activation of the public realm. These alternatives are to be used as a source by the City of Detroit's Planning and Development Department as an instrumental body of

knowledge to demonstrate how design can contribute to the social and economic restructuring of the city. For Maurice Cox, Detroit's planning director, the exhibition becomes, "an opportunity to expand the conversation about design into the neighborhoods."[3] In particular the student work showcased in the exhibition is to instigate discourse on current and future housing trends, changing lifestyles, evolving neighborhood development, and Detroit's opportunity to become a national leader in housing design.

[1] Borden, Gail Peter, "New Essentialism / Material Architecture" Applied Research + Design Publishing. 2018, China. P. 269
[2] https://formbasedcodes.org/definition/
[3]www.freep.com, Gallagher, John. "Detroit neighborhoods neglected? Exhibit, Kresge grants say otherwise" Sept. 12, 2017

Applying Academics' HUNCHES into Reality I

Friday, March 29, 2019
09:00-10:30

An Interdisciplinary Architectural Pedagogy for Social Relevance
        Kelum Palipane, University of Melbourne

The increasingly complex conditions in which architecture is practiced today requires the exercising of a critical consciousness. A consciousness which drives contextually relevant praxis responding to socio-economic, environmental and demographic multiplicities resulting in spatial and programmatic conceptualisations hitherto unprecedented in normative practice. It is no longer enough to concentrate on the conditions of a bounded site. This awareness needs to be raised during architectural education by exposing students to knowledge and methods -often interdisciplinary- that allow them to read and represent these complexities and address them through critical design responses. Several pedagogical challenges arise in such an approach; how to design a studio curriculum that embeds expertise knowledge of the profession while engaging in complex contextual issues? Can students be compelled to engage with politics of space? I believe a strong research-teaching nexus can contribute to addressing these issues.

This paper presents the curriculum design and selected outcomes of a core first-year undergraduate design studio at the (censored for blind peer review). It is a curriculum that has been informed by my interdisciplinary research for design and considers culturally conditioned, multiplicitous bodies as a device through which to interrogate the social and spatial implications of occupying space at multiple scales. I begin by discussing the curriculum design and how it incorporates interdisciplinary - specifically ethnographic- methods alongside more traditional architectural conventions. I then demonstrate selected learning outcomes by unpacking specific examples of student work while discussing the unique challenges of coordinating a large undergraduate design studio that is core to multiple disciplines. I conclude by arguing that it is possible to embed fundamental knowledge relevant to the profession while engaging in complex (albeit imagined) contextual issues.

As a core studio for the undergraduate Bachelor of Design cohort, students come from diverse cultural backgrounds and number up to 320 per semester, spread across 24 tutorial groups. Of this number, approximately 60% self-identify as Architecture Major students, 30% as Landscape Architecture and the remaining across Urban Planning, Urban Design and other Majors. The studio is structured into two key stages: the first 5 weeks of a 12-week semester entails learning from existing built spaces that students can easily access (e.g. areas of the building in which the school is located and other sites within the university premises) and analysing them through themes and methods introduced in the weekly lectures. These themes correspond to specific scalar implications for the body; the civic considered at 1:500 scale, the communal at 1:100 and the individual body at 1:50 and 1:5. These are experiential exercises that aim for

students to critically reflect on how fundamental design principles and their anthropometric and ergonomic implications impact human behaviour and the experience of space. They are introduced to simple, immersive ethnographic methods such as 'participant and non-participant observation' as well as insights from my research that related to the occupation of space such as; how the tactical use of space allow multiple social realities to exist in one space, how expression of identity occurred through bodily postures and gestures and how the unravelling of affordances in the built environment further reflect the specificities of the bodies involved, how the unprogrammed appropriation of elements defining space e.g. the ground plane, allows agency for users. The introduction of these themes allow students to gain insight into the intersectional relationship between time, space and the social body.

Figure 1 illustrates selected student outcomes from this preliminary stage of the studio where they sketched elements defining space, spatial progression, relationships between bodies and between bodies and the built environment through culturally conditioned spatial concepts such as privacy, personal space and territoriality. 1:500 and 1:100 scale analysis of the study area captured spatio-temporal occupations of space across the site and how it is influenced by formal organisational strategies of form and space. The 1:50 scale section in Figure 2 reveals the consideration of the spatial implications related to microclimates, sun path and and the impact of light and shade. Focusing on the interfaces between buildings and open spaces, the drawings reveal an understanding of the micro-climatic conditions created by the built environment and adjacent vegetation. At 1: 5 scale (figure 3) students consider materiality and detail through the study of an object the body comes into contact with. While the drawings are essentially traditional measured drawings, they were encouraged to include diverse bodies engaged with the object and consider how materials register the inhabitational patterns, and the histories of occupation and use.

The remaining weeks consist of designing a terrain of micro-infrastructure in a specified urban site. Framed within an imagined scenario of complex demographics of a group of people seeking refuge, the students design a programme for emerging socialities and economies within an urban context. They revisit the scalar implications of the socio-spatial and functional issues studied earlier in the semester and apply this knowledge in a new context. At the broader site scale illustrated in 1:500 scale models (Figure 4), students utilise formal organisational strategies as well as knowledge of sun path and orientation to site aspects of the brief. The designs of the micro-infrastructure explored at 1:100 and 1:50 scales were often tactical in nature. Form and space were considered flexible, accommodating multiple functions and appropriations. They privileged the human scale and carefully considered anthropometrics. Perspective vignettes of spatial progression are drawn at 'standing figure' viewpoint to encourage consideration of how users may use and experience space. Detail and materiality and how the body engages with the design are encouraged to be detailed at 1:5 scale (figure 5). In the interaction with built space, the importance of materiality was illustrated as bodies interacted with and became affected by the nature of materials. Inevitably, in a large cohort of students there will be a wide and varying range of capabilities and skills. While the studio aimed to engage students in the critical consideration of societal issues in an

innovative way through the design decisions they make, there are always examples of superficial engagement and a tendency towards depolitisization of issues. This may also be reflective of the reductive propensities of architecture as a discipline. Students also encountered difficulty at the transition from analysis to synthesis stages in the studio. This way of structuring a studio is not new and the associated challenges are well documented (Salama, 2015), but it was hoped that by revisiting the same scalar implications through the same architectural conventions, students gained the benefit of a re-iterative design and production process.

A 'hunch' while defined as an uninformed guess, is usually the starting point of a researcher. A moment of intuitive understanding before a hypothesis is formulated. In this instance, a hunch which became research for design was able to inform teaching practice. Peter Downton defines research for design as increasing "...knowledge of another field...with the expectation that at least some ideas will be able to be appropriated in a way that will be useful to design and designing" (Downton, 18). In this way, the interdisciplinary curriculum design outlined in this paper that draws from sociology, human geography and cultural studies, built awareness or sensitivity in students to issues of urban diversity, identity, and social equity allowing critical and imaginative engagement with the hypothetical social and political context in which they were working in. Focusing on the human body and its social and spatial implications within a narrative, enabled threads of broader, more complex societal issues to be woven in. They also moved beyond a typical phenomenological engagement with the body, where it is stripped of inherent contingencies such as gender, age and ethnicity becoming aware of its socio-cultural implications. While in this way the curriculum aimed to make explicit the social relevance of design, it also aimed to link this awareness with design decisions. This was achieved by embedding key disciplinary knowledge and processes within the curriculum.

Curricula across architecture schools should allow for a diversity of ideas; fostering alternative ways of conceptualising space and approaching design. Interdisciplinary design research can play a pivotal part in this. This would not only harness the potential of increasingly diverse student cohorts but can be the key in making tertiary education a place of multiple epistemes, contributing towards a broader aim of producing thoughtful and socially aware citizenry.

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All Access: Better Fits for Architecture
        Julia McMorrough, University of Michigan

"If physicality and sociality are closely linked, design has a clear role in negotiating the two. That is, designers have it in their power to invent better fits."

-Elizabeth Guffey

In 1975, disability activist Victor Finkelstein modestly but pointedly proposed an "imaginary example which turns the world upside down," where wheelchair users lived together in a village no longer obliged to accommodate the able-bodied, who found themselves comparatively disabled by their ill fit into their surroundings. That same year, Peter Eisenman's pointedly disorienting House VI was completed, intentionally confounding inhabitation by even the most robust physical specimens. Nearly two decades earlier, in 1956, Selwyn Goldsmith contracted polio in the same year he earned his degree in architecture from the Bartlett School of Architecture. With his drawing hand paralyzed, his life and career had to adjust themselves accordingly. His life's work would engage his insights into both realms - architecture and disability - and in his seminal work, *Designing for the Disabled*, he upended established views on 'medical disability,' exposing instead the idea that architecture was responsible for the creation of disabling environments, and, further, that "the architect can prevent people from being disabled when they use buildings."

This paper explores architecture's relationship to accessibility, through analysis of a recent pedagogical effort predicated on two strong hunches: that students can leave school well-versed in designing for disability; and that architecture, in turn, can be more innovative and inventive when asked to respond more expansively to accessibility in our built environment. Focusing on clues from beyond the discipline to establish architecture's present and future stake in accommodation, this work has prompted an alternative future history for architecture and accessibility to be written, through the development of the graduate thesis studio "All Access." Students began by inverting the balance from thinking of accessible design as addressing five percent of situations and people, to asking it to address 95, or even 100 percent; and by asking, what if, in the process, architecture found itself changed for the better? Architecture studio is a unique instance where there is (almost) nothing to lose by trying something new, and as it regards the pressures that accessibility puts on space, form, material, and society, in this course, students have taken the opportunity to revolutionize forms accordingly. The degree to which exclusionary environments are excused if created in pursuit of other goals is a conundrum not specific to architecture. Almost a century ago, U.S. President Franklin Roosevelt sought to minimize the impact of his paralysis on his public image and re-designed his interaction with his surroundings, though he believed that giving the public access to the accomplishments of his accommodation would undermine his ability to lead. This reflected a selective resistance to ideas ahead of their time, even in a moment when wounded soldiers returning from the 20th century's two world wars brought more global awareness of disability. Earlier, the late 19th century protagonist of Edwin Abbott's Victorian satire Flatland, indignant, posed a rhetorical question regarding the imperfect irregular geometric figures in their midst: "are the houses and doors and churches in Flatland to be altered in order to accommodate such monsters?" Though this did not dignify a response in 1884, the question established a prescient possibility.

These juxtapositions expose fascinating architectural blind spots regarding accommodation. From the Vitruvian Man's influence on the Classical orders, to Le

Corbusier's Modulor system, architecture has had difficulty shedding its indoctrination to the virtues of designing from and for the most optimal human form. Or, possibly, consumed by other agendas, architecture's acceptance of these physical ideals has conveniently neutralized the potential of a wider definition of people. This paper outlines the evolving attitudes of design for accessibility through efforts that have run counter to parallel architectural histories, and proposes a new accessibility - which promises not only the ability to be reached or entered, but also an approachability that architecture has repeatedly chosen not to pioneer.

To many students (and some practitioners), the word 'accessibility' is more apt to evoke images of rules, toilet stall dimensions and ramp slopes, than of the protection of the civil rights of people with disabilities. And despite progress that includes the Americans with Disabilities Act, it is not uncommon even still for architects to approach accommodation as an unwanted afterthought to a design, making it unsurprising that students might also be challenged to recognize an upside to constraint. But it's the ability to navigate and accommodate emerging issues in a capacity that transcends the perception of limitation that is one of architecture's significant powers. Graham Pullin, in *Design Meets Disability*, describes the ubiquitous "trickle down" effect, where mainstream products might eventually make it down to the more specialized audience of people with disabilities. But, Pullin asserts, "flow in the opposite direction is just as interesting: when the issues around disability catalyze new design thinking and influence a broader design culture in return."

Architecture's historically delayed reaction to accessibility has resulted in a reluctance to establish new design terrain regarding disability. While this has prompted the efforts of the "All Access" studio, the work that has resulted seeks to prove the hunch that architectural education is ideally situated to invent productive protocols that not only eschew defaults, but also allow the academy and the profession to rise to new occasions.

Neonomads: Between Education and Practice
Gregory Spaw, American University of Sharjah
Patrick Rhodes, American University of Sharjah

This paper examines the inherent intermediary realities of design-build within a continuum of academia and practice through the presentation of a series of "in-betweens" associated with a year-long design-build studio, a mobile shelter and research station for the Sharjah Environment and Protected Areas Authority (EPAA) sited within the extreme climatic conditions of the Arabian Desert. It analyzes a set of liminal cultural, environmental, and architectural conditions that we encountered, and presents an assessment of the studio experience that includes a description of community engagement, the design process, and built work. The impetus for the studio was a fascination with the disappearing Bedouin culture, nomads who have preserved their way of life for thousands of years and are the masters of the more than 650,000 square kilometers of open sand desert of the Rub' al Khali, or Empty Quarter, and their

intersection between the rapidly developing and modernizing culture of the United Arab Emirates. As veritable outsiders, we began the project with no site, no client, or community partner and a hunch that within the year we would engage the community and penetrate the desert, as few foreigners have done before. For students and faculty alike, the course blurred the boundaries between a singular, challenging educational experience and an intense physical and practical effort. While we constructed and sited multiple structures along the way, ultimately the studio became characterized less as a building project than as a process of negotiations between the known and the unknown, nature and society, the old and the new, and success and absolute failure, in which we often found ourselves between a rock and a hard place.

Between Cultures

The Bedouins managed to survive for thousands of years living in the Empty Quarter of Oman, Yemen, Saudi Arabia and the UAE, through extreme heat and scarcity of food and water, without the need for high technology and, for most of that time, with little contact with the outside world.[1] The Emirati culture, also tribal and nomadic through the better half of the twentieth century, has raced toward modern development since discovering oil. Leaving their tribal past to form the country 45 years ago, they moved from tent and adobe to contemporary, soaring skylines in a short time and became a major global player in finance, trade, and tourism, boasting a 2475% increase in oil revenues between 1970 and 1975, alone.[2] With an imported labor force, Emiratis now make up less than 11.5% of the resident population, as Indians, Pakistanis and other expatriates compose the majority to become one of the most diverse populations in the region, if not the world.[3] As it developed, rather than actively and purposefully preserving its cultural heritage, the UAE left behind nomadic traditions and the Bedouins were assimilated into a new way of life.[4] Additionally through this rapid melting of cultures, the local building industry has evolved into a blurry and unconventional mosaic of traditional, natural, modern and artificial technologies, materials, and building methods, posing a challenge for two American faculty. Our student team, comprised of 31 women and 3 men from more than a dozen countries, were raised in modern cultures but found themselves connected to the Bedouin and the desert through a romantic and somewhat intangible notion of cultural heritage. The project was situated to both take advantage of the students' technologically savvy upbringing and ability to navigate the multiethnic, multilingual culture while providing them a vehicle to revisit, reinvestigate and, in some way, reimagine their ancient pasts.

Between Enviroments

The Rub' al Khali is the largest open sand desert in the world, supports only the hardiest animal life, has little to no vegetation, and offers few sources of water.[5] The deserts extend into the UAE and merge with a variety of other landscapes and ecosystems, including barren mountains scarred by seasonal wadis, acacia tree forests in gravel covered alluvial flood plains, and mangrove thickets along the coast of the Arabian Gulf.[6] As a tropical desert climate, there is little rainfall but high relative humidity due to the proximity to large bodies of water and, when combined with extreme high temperatures, frequently above 115 degrees Fahrenheit/ 46 degrees Celsius during the summer months, being outside in the UAE can be deadly.[7] Although historically

hardened to living in these harsh conditions, the Bedouin and other local peoples have long since left behind unconditioned desert dwellings for the comforts of air conditioned buildings, including some of the highest skyscrapers and largest shopping malls in the world. The impact of shifting attitudes toward comfort and favoring artificial interior environments is evidenced in the built environment's rapid encroachment upon and, inevitably, the degradation and loss of natural ecosystems.[8] Not surprisingly, many of our students are unaccustomed to being outdoors and most have never slept a night outside. Working with two environmental scientists from the EPAA, who manage eleven diverse protected areas throughout the emirate of Sharjah, required us to look back, ironically perhaps, to the simpler, lower tech traditions of the nomads, as the scientists often camp overnight in areas with no access to power or water and vehicular access to these sites is strictly prohibited. In this way, reintroducing the students to the ancient customs of laboring in the heat, sleeping under the stars, and walking with your home on your back became less a pedagogical constraint than a practical imperative.

Between Architectures

With the harsh realities of the desert ever present and the logistical challenges under serious consideration, the architectural inquiry of the design-build was first and foremost one of shelter and survival. Nevertheless, due to the intrinsic qualities in this isolated and pristine setting, the potential for framing a transcendental experience became of even greater significance. To get the team to that operational mindset, the initial exercise, entitled Deployment, charged the students with research, design, and fabrication related to the query: how do things move/how do we move things in the desert absent camel power and the internal combustion engine? This prompt proved particularly insightful not only in alerting the team to the inherent dangers of such an unforgiving context but more practically to relevant concerns of viability, materiality, and durability. In hindsight, perhaps it was a hunch that led us to ask this question, but both of the sites eventually proposed by the Sharjah EPAA were indeed inaccessible to vehicles due to either physical terrain or environmental sensitivity. This initial problematic coupled with subsequent investigations of historical precedent led the teams to develop architectural proposals that, over the course of the year, both addressed and oscillated between issues of mobility and permanence, lightness and weight, as well as short-term goals and long-term vision.

Conclusions

In terms of learning outcomes and "building a better bridge between the academy and the profession,"[9] the benefits of design-build are generally accepted but by its very nature design-build is neither a purely academic exercise nor fully representative of the methodologies of the design and building practices. And yet because of this otherness, in-between the silos of the academy, practice, and the building trades, utilizing design-build as a process challenged the participants and garnered a multifaceted educational experience that dialectically negotiated between a series of cultural, environmental, and architectural extremes. While still working toward our ultimate goals, this assessment evidences both the successes and failures of the pedagogical and practical strategies thus far implemented and further reveals the capacity of design-build to foster

equilibrium between teaching and practice, while actively engaging the community more broadly.

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Expansive Learning and Change Laboratory Model in Architectural Education: A Mexican Approach

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Latin American architecture and with it, architectural education frequently celebrates the insertion of local projects in the international design stardom globalized as vanguard symbols of development, quality of life and local capacity for innovation. The material environment follows the logics in which the urban image and architectural objects are non-textual elements in a political, economic and social discourse. Thus, the 21th century architectural and urban re-invention is easily focused on the transformation of the material world to images of glamorous architectural objects and urban landscapes, de-territorialized from their local contexts, their people and the local narratives of place. In this context, UDLAP researchers' initial question was, how should critical architectural education trigger locally based development innovation with potential to face global challenges of the professional world?

The exploration of a new and locally viable architectural approach to sensible Mexican urban territories was triggered by a project seeking to respond the collision between the traditional community of Cholula, Puebla, and the recent urban development around it informed by global economy and its architectural aesthetics. How to promote socially responsible professional practices and sustainable environmental transformations in architectural education in a context where global forces are influencing local urban planning policies?

Thus, this presentation exposes advances to approaches of strategies in architectural education based on collaborative community development and social urbanism informed by socially responsible new localism (Katz and Nowak, 2018) and regenerative development design (Mang and Haggard, 2016). The main objective of this initiative has been staking out the role of the architect as social and environmental mediator within the framework of critical realism (CR) (Sipos et al., 2008 and Hofer and Pintrich, 1997) through expansive learning (Engeström, 1987, 2001, 2004, 2007 and 2009) in architectural education. The Mexican Challenge: Urban Inclusion and Exclusion Urban realities are products of different and changing urban associations or assemblages caused by encounters and clashes between economy, culture, urban development, public policy and social antagonisms (Farías, 2010). These as triggering forces of urban assemblages manifest themselves in, transformations of urban scale and image and emergence of socio-economic segregation in the framework of which everything is measured by the generation of economic benefit and not by the production of human essence (Schumacher, 2010).

The notable characteristic of the contemporary urban processes is their growing relation to life styles converted to commodities transforming cities to merchandise of the consumer culture. In developing countries as Mexico, not all the population is able to enjoy urban life styles or urban quality of life as the majority suffers of unbalanced distribution of socioeconomic resources. This is observable in the severely fractured urban territories with their exclusive, higher middle-class gated communities beside slums and urban belts of poverty, massive lower-class living complexes and peri-rural areas tightly surrounding the ever-growing metropolitan areas. The result is a complex tissue of micro-states living their own, apparently independent life without a clear connection with the urban whole (Harvey, 2012).

The neo-liberal public policy of the last 30 years transferred the urban planning and social-housing responsibility to private developers (Schumacher, 2016). Thus, the public-private alliances were converted to powerful developer and management agents of urban territories, with a focus on the economically promising urban areas through spectacular, high cost urban developments and public buildings of international star architecture with formal innovation but little human contents or quality of public space. These urban tendencies, taking frequently advantage of the lands of those poorly empowered habitants of the peri-rural territories, historical centers and traditional rural communities, have triggered great social transformations in areas they impact through expropriations, expulsion of local population and insertion of intensive real-estate business. (Kurjenoja, Ismael and Hernández, 2018). This commodification of cities triggers other undesirable phenomena, as the increment of land value and with it, social inclusion and exclusion (Kurjenoja, Ismael and Hernández, 2018).   In this context our case study, Cholula, the Sacred City, with a millenary socio-spatial structure that has survived until today is facing, like many other cities in the world, the emergence of gentrification threatening its identity and cultural landscape due to globalization and new urbanism causing processes of socio-economic, identity and material changes colliding with ancestral settlement patterns. Research work was done by direct observation and experiential-qualitative analysis of landscape transformations

detonated by public policies promoting gentrification, demographic dynamics and market forces shaping urban development. In it, a special attention was paid to the conflict between community resistance and urban-economic trends and changes were analyzed not only as population displacements but also as part of an urban phenomenon including changes in land use, urban density, landscape and socio-spatial dynamics. It was not only about changes in the image of the city in a broad sense, but also about endangering the existing functional neighborhood or barrio organization.

The HUNCH and Architectural Pedagogies II

Friday, March 29, 2019
11:00- 12:30

Pas de Deux
 Clarisse Labro, Swiss Federal Inst. of Technology
 Dario Negueruela, Swiss Federal Inst. of Technology

From the Merriam Webster online dictionary: Pas de deux: 1 : a dance or figure for two performers   2 : an intricate relationship or activity involving two parties or things Educators and their students mutually benefit from a rich and fulfilling relationship. It is rewarding when both parties come out of the studio feeling that they have gained some knowledge, learnt or re-discovered pleasure in the uncovering of a conceptual or making tool. How does this knowledge get positively transmitted? How do we build this relationship? The human aspect of this pas de deux cannot be overlooked. It will mold the student's professional future, and inform the teacher's present practice.   To reveal the intuitions, hunches, and attitudes an educator/architect may employ, in order to dance rather than stumble on this particular stage, is to then reflect on the fundamentals of an architectural education. For this paper, the two dancers of the pas are an analogy for the journey into the intertwined identities and roles of those partaking in the learning experience. This dance happens at different levels, involving not only the teacher and the student but also the practitioner with the teacher, or the citizen with the academic. One might argue then: "It isn't a Pas de deux, but two solos?" Except that the two roles are intertwined and feed one another - therefore, the dance wouldn't exist if it were two separate solos. The dancer never wears a single role as the person is multiple, travelling between identities. One might ask: "Maybe they are simply following a beautiful and pre-defined piece of choreography?" A composition and arrangement of dances?   Not really, as the outcome is not pre-determined and the two performers evolve their dance contingent to one another.   One of the triggers of this research is the realisation of how many colleague architects reach a deep dissatisfaction and disappointment within the first 10-15 years of practice. Is the chasm between the aspirations of school and the realities of practice too wide? Are the relationships with our peers and work somehow altered so pleasure is lost in the "professional world of architecture"? In search for an answer to this situation, we question traditional architectural pedagogical models and their adequacy for preparing future generations of architects for the societal challenges we face.   We believe an open and dynamic interaction between student and teacher has a deep, if often underestimated, effect on both the learning process and the personal identity transformation that accompanies the architectural educational experience. Our hypothesis posits the crucial role of the pas de deux itself within the learning environment in enhancing our capacities to empathise and explore solutions. Capacities, we argue, that remain at the core of the necessary tool kit for any sensitive, ethical and civic professional that might be asked to contribute to the design of our common future. Finally, we humbly speculate about the potential of establishing the pas de deux dynamic as the guiding image for a different model of the teaching environment in architecture. The trajectory of the choreography of the pas de

deux mirrors the trajectory undergone by all participants within the academic world. This is the result of a relationship based fundamentally upon open engagement, trust and honesty. In this paper, we will argue that in combination with these qualities, the structure of the pedagogical set-up and the predisposition and availability of the educator in time and space are fundamental in transforming the students' attitudes and learning culture. This will be discussed in light of recent pedagogical paradigm shifts foregrounding learning as an active endeavour rather than the passive reception of static knowledge. In this discussion, we'll consider how the analogy of the pas de deux helps us better perceive and inquire into the actual performativity of the teaching experience. In this context, we use RanciÉre's ideas on emancipation to consider to what extent, how and when the teaching/learning experience manages to produce both novel and personal knowledge which does not emerge from simple emulation. Teaching enhances our experience as practitioners. The relationship being built with students is where it all begins and is what makes it grow. It is an exchange that makes us all evolve. Bringing one own's experience to a group of students with no or little knowledge of the "field" is part of what intensifies the personal and professional relationship we have with our practice. Engaging in a dialogue with students and teaching colleagues helps one fine tune one's thoughts, designs and attitudes towards the industry. The analogy of the pas de deux appropriately describes our attempt to analyse the complementary relationship between practicing and teaching architecture. By weaving this analogy with the analysis of one own's experience, we aim at sketching a broader reflection on the relationship between Practice of teaching and Teaching of Practice.

Re-conceptualizing the Role of Tutors in Research-Based Pedagogy: The Tutor(s) as the Curriculum

Olga Ioannou, National Technical University of Athens

The paper presents the efforts made to experiment with the pedagogical framework and the operational model of a postgraduate urban design studio based on the reconceptualization of the role of tutors. In the model examined here, the curriculum was devised as an open and evolving network of the tutors' resources and affiliated researchers from within or outside the setting of the academy. This mosaic consisted of different individual research and design practices that are problem-focused and context-specific, communicated directly to students by the very people responsible for their conception and development. Learners were required to investigate the instrumentality of these practices according to their own personal pursuits; to make their own networks of connections, and were even encouraged to create their own personal schemata of design research. In fact, the second major shift of the rethink lay in recognizing learner autonomy and diversity, thus establishing a new operational framework for the two to prosper. An amalgam of interconnected learning spaces provided the conditions necessary for all these networks to co-exist and interact. The paper describes the different aspects of the tutors' involvement and contributions in the design and implementation of this model, as they assumed a number of roles, but most importantly, as they became learners themselves.

Pedagogical framework principles
The key drive behind the studio redesign originated from the ever growing importance of research in design education and practice (Rodgers & Yee, 2016) as a means of connecting education to practice and also expanding the knowledge base (Kocaturk, 2017). The aim was to create a research-based pedagogical scheme with an emphasis on processes and problems (Healey, 2005) where tutors' experiences are strongly integrated into the learning activities and where learners become researchers themselves (Griffiths, 2004). The curriculum consisted of a series of design methodologies selected by means of their instrumentality in reading and managing urban phenomena related to the tutors' past experiences or their own intentionality. These were either analytical or experiential and derived from the institutional applied research; several doctoral projects that were still in progress, as well as a series of devised encounters with artists in the very place the learners were called upon to intervene (Fig. 01).

The decision to include multiple practitioners and especially artists, was made to encourage learners to explore the space in between what is well known and defined through other ways of knowing (Ito, 2017). Such activities can still promote criticality and creativity, but are neither necessarily architectural nor formal; instead, they constitute alternate, informal ways of understanding complex environments and making meaning. The decision also marks a shift towards a more transdisciplinary understanding of the educational process, one that blends scientific knowledge with cultural empathy (Jamison et al., 2011: 4), advocating for innovative and context-specific approaches to the design praxis for understanding the present world (Nillson & Dunin-Woyseth, 2008). The curriculum was also founded upon the idea of multiple knowledges (Hatleskog, 2017: 122); once applied, the different methodologies included in the curriculum may lead to contradictory or conflicting perspectives. The elusiveness of a single valid design solution challenges learners to attempt their own interpretations, according to their diverse backgrounds and their own networks of relations. This principle aligns to both constructivist theories, where knowledge is perceived as a social construct, as well as the more recent connectivist views placing knowledge construction in the individual's personal recognition of patterns between networks (Downes, 2017).

Another major challenge - also related to the scale of intervention- was to direct design processes toward the handling of people and natural resources and not just design's morphological or material aspects; form was abandoned as the first principle of design success "in favor of the exploration of alternative ways of addressing social, emotional and political ends" (Hunt, 2003). "Creativity ceases to be about self-expression and escapes the current frivolous obsessions with form and theory," argues Pete Buchanan (2012), "especially if one places the fundamental purpose of architecture in helping people create themselves in line with an evolving vision of who they want to be".

Operational model principles
Presenting the curriculum as a network of tutors' connections, and assigning learners with the responsibility of traversing those networks to make their own meaning,

gradually led to the reconfiguration of the studio's operational model as well. Pedagogical principles were originally translated into a list of properties that was later further enriched by the desired operational imperatives that drew from blended and networked learning practices. The list, among others, includes agency; openness; collaboration and immersion. Interestingly, many overlap (Fig. 02).   Studio activities were eventually distributed in three different learning environments, both formal and informal: online, in class and in situ. Meanwhile, the physical and virtual spaces mediated through these environments were intertwined in a synergetic, networked mode that involved extensive exchange and interaction between the diverse contexts in which learners participate (Dohn, 2014), while allowing them -among others- to individuate a learning network; and to emphasize technology as well as people (Goodyear & Carvalho, 2014: 42).

Discussion
Blended and network learning pedagogy has determined numerous new roles for the tutor(s): tutors can be administrators, modelers or curators (Siemens, 2008); information filters, facilitators or change agents (Drexler, 2010); and for some even community leaders (White, 2010). It is not a matter of either/or; tutors may at some point assume one or the other. However, while most -if not all- of the abovementioned qualities can potentially represent the tutors' range of roles in research based pedagogy as well, the latter ascribes tutors with some very important additional attributes.   The tutors responsible for this studio acted primarily as designers; both in planning the studio layout and the overall learning experience, but mostly in considering it as a set of processes that reproduces the sometimes chaotic character of the design praxis. This attitude resists directing the course towards predetermined learning outcomes; instead, it encourages the learners to decide for themselves what course to follow. The tutor-designer binary here is represented by a shift from "teaching what one knows", to "illustrating how one thinks" or even "identifying who one is". The studio becomes more than content transmission, it is a process of "modulating identification across multiple locations of accountability" as Wenger (2010) has eloquently put it. This also explains why tutors set the agenda of the dominant themes from early on in the course: in this case, social relevance; natural resources; and the sensory and the emotional experience of the urban domain. This is a model where there is little or no control over how the learners will respond. The tutors are called upon to supervise a series of eclectic student projects that vary in theme and scale. This has two major implications for them; one is that they need to develop strong listening skills for what Levin (1989) calls "the sharpening of reciprocity". If learning is situated in the process of making connections, then it becomes essential for tutors to lend an attentive ear to the learners in order to support them creatively. The second is that tutors need to be open to the other(s). If tutors are indeed a sum of interconnected parts as their fluctuating, networked nature presented in this paper implies, they too should be able to adjust and adapt to otherness. The constant confrontation with multiple perspectives challenges tutors' network hierarchies and places them in the learner section of the classroom, together with their students.

From Critical to Transformative Pedagogy in Architectural Education

Kristin Jones, Illinois Institute of Technology

It is my "teacher's hunch" that transformative pedagogy will find fertile ground in architectural education. Transformative pedagogy is a contemporary educational ideal intended to actively promote the transformation of the life (and inner perception) of the learner and his/her community. It emerged at the dawn of the 21st century from a line of counter-hegemonic pedagogy that has been called emancipatory, liberalizing, radical or critical in an effort to chart a new direction for post-industrial education.

The paper traces that line of educational philosophy from Plato's "anamnesis" through Kant's "transcendental idealism" to Hilbert's "meta-mathematics" to shine light on some of the historical ideas that shaped modern architectural education and which remain important today.

As much as an emancipatory ideal underpinned the philosophy of modern architectural education, it also called into question the universal form it had taken. When subjectivity and diversity emerged as radical ideals at the end of the century, they disrupted the claims to universality upon which modern architectural education was based, throwing it into a friable state which begged for reform. I advocate a shift toward transformative pedagogy for a more inclusive perspective and as an alternative to infinite pluralism and market-driven ideals spurred by postmodern criticism. Taking inspiration from the visionary ideas of Freire, Mezirow, and O'Sullivan, and the long-standing educational ideal of emancipation, this paper aims to lay out a trajectory for 21st century architectural education that builds upon our past and provides a direction for our future.

Emancipation and education
This section shows how the long history of education is connected with an emancipatory ideal. Plato's concept of eternal form or idea (beyond our fallible senses) is linked to God in Medieval times (the eternal light and salvation), and critical philosophy and Kant's concept of "transcendental idealism" during the Enlightenment. After Kant, critical philosophy diverges down two separate paths (science and art) and later developments in psychology (Freud, Piaget, Skinner, Bloom, Maslow), once a sub-discipline of philosophy, begin to shape our views on natural child development and patterns of education.

20th century critical pedagogy
A brief review outlines the contributions of Pestalozzi, Fröbel and Montessori and later Steiner and Dewey to emancipatory pedagogy and the schooling of children. Ideas behind David Hilbert's meta-mathematics are discussed in connection with the idea of a Basic Course (e.g. German Bauhaus *Vorkurs* and Russian *Vkhutemas*) in order to link critical pedagogy and collegiate art and architectural education. In attempting to establish a new and authentic vision and language for the arts, this pedagogy also stood for freedom. Around mid-century, critical pedagogy focused more attention on social conscientiousness. Critical pedagogues advocating freedom in both an educational and social sense included Dewey, Hutchins and Freire.

Toward transformative pedagogy
At the end of the 20th century, a need to distinguish versions of pedagogy which focused primarily on problems of industrialization and adapting to a global market (then known as "critical pedagogy") from post-industrial 21st century pedagogy is perceived. Modern architecture is having a difficult time responding to postmodern critique, universal ideas are called into question inasmuch as they obfuscate subjective human experience and value, negative effects of industrialization (both ecological and social) are becoming difficult to ignore, social problems (rising wealth inequality, safety of women and children uncertain, suicide deaths rising) are shifting and so on. Transformative pedagogy is Education's response to 21st century thinking and 21st century problems. Its general outlines are presented as follows:

1.) Reframing perspectives - See Jack Mezirow, *Transformative Learning*, 1997. Transformative learning shifts from discernment to identify and label to discernment to identify and connect.
2.) Participatory pedagogy -See Paolo Freire, *Pedagogy of the Oppressed*, 2000, for "Critical praxis" directed at transforming the self and the world, and Henri Giroux, *Schooling and the Struggle for Public Life*, 1988 - that we are co-creators of reality.
3.) Promotes higher order thinking - Discusses inquiry based learning, problem based learning and scaffolding technique, with examples.
4.) Critical transformative perspective - See Edmund O'Sullivan, *Transformative Learning*, 1999, which identifies four stages in the process of critical awakening as a normal developmental pattern in adult learning.   O'Sullivan's transformative vision is an inspiration for architectural education. It is not enough, he says, for 21st century education to strive for equal opportunity for all to participate in the global-industrial-capitalistic world order. On the contrary, we need to develop critical awareness of the destructive nature of the global industrial economy and the role we and our educational institutions play in its perpetuation. To reconcile the fragmentation of modern thinking and way of life, he proposes an integral theory of natural and human development in a cosmological context. He envisions "quality of life" education (also see UNESCO 2018) honoring bio-diversity and the sacred web of life, and as a means of learning about ourselves and what unifies us all, he suggests learning about our local bio-regions, our home planet, and our universe. The role of educator in this framework shifts from teaching students to function within an existing social order to visionaries working to bring about radical transformations in social thought and culture.
Opportunities for architectural education

This section details my hunch, that the locus of transformative power in architectural education lies not in tradition nor at the bleeding edge, but in its ability to develop vision. As architectural educators, we are already accustomed to training our students to think about our world in different scales and from different points of view, and we already have pedagogical precedents. Taking O'Sullivan's vision for education as a starting point, I propose the following as opportunities in architectural education.

1.) Reframing perspectives - As educators we need to be aware of our role in constructing reality on different levels. We could easily think about design in 21st century terms with an ecological design narrative that provides the integral nature-human paradigm within which to view system particulars, each one with distinct and dynamic organizational and/or developmental patterns.   We also need to be engaged in the discipline of architecture as our ability to transform lives and communities depends on our skills in practice.

2.) Transformative critique - I suggest a concept of transformative critique (for students to grow into broader perspectives through active learning and dialogue) to be used in the architectural studio as an alternative to constructive criticism (e.g. helpful suggestion toward resolution), and also offer examples.

3.) Transformative curriculum - Architectural design is still the primary focus of professional architectural education. Typical design problems include building types of increasing scale and complexity. I suggest bolstering the design curriculum with visual pedagogy (which expands and clarifies our ways of seeing), and planning pedagogy (which considers bioregional conditions in connection with human settlement -- e.g. Hilberseimer *The New City*, 1944 and *The New Regional Pattern*, 1949) as the pillars of transformative architectural curricula.

Urban Studies is a growing field. According to the 2015 UN Agenda (Cities, 2015), new sustainable models of development will need to replace the zoning-transportation model (an economic model; good for some, not all) to accommodate the growing urban population (50% living in urban areas today, 68% by 2050).

UNESCO's response to 21st century problems now includes Global Citizenship Education and Education in Sustainable Development envisioned within a holistic and transformative learning paradigm. Correspondingly, NAAB accreditation requires that graduates be knowledgeable in the areas of "History and Global Culture", "Cultural Diversity and Social Equity", and in "Environmental Stewardship". Schools are already finding creative ways to address these aims: 1.) U.S. Department of Energy biennial collegiate Solar Decathlon (now international). 2.) Hands-on summer outreach programs - students and teachers travel to sites in the U.S. and abroad to construct needed facilities for a variety of users. 3.) Projects for people and communities who have been touched by poverty and/or natural disasters allow students to actively engage in local or global civic activity while learning hands-on knowledge and skills of the discipline.These projects also provide opportunities to learn from past experience and develop/implement new knowledge on sustainable development and world culture.

Conclusion
Architecture schools fulfill a practical need in preparing young adults for the profession while also aspiring to reach deeper needs like fostering a sense of freedom and belonging. Quality education now means more than access for all. 21st century thinking challenges us to consider our beliefs and actions from different scales and points of view; immediate and long-term, local and global, personal and collective. Much like the shift from Plato's sensory-eternal paradigm to Kant's particular-universal paradigm, transformative education calls for a paradigmatic shift in thought and vision. Smaller-scaled conditions to be perceived as functioning within larger-scaled frameworks; as living organisms, rather than as static conditions; with distinct and dynamic organizational and developmental patterns. As we move toward quality of life education in architecture, with goals of global citizenship and sustainable development in mind, I hope this paper will serve as a reminder to continue to balance the practical needs of our discipline with the long-standing emancipatory ideal of education.

The Architectural Teaching Paradox. The Practice-Based PhD as a Compass in Navigating through the Incommunicable

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"It is not possible to teach architecture, but it is possible to learn architecture" (Botta, 2018). This statement unveils the paradox inherent in architectural education: we can teach history, theory, and technology of architecture, but we cannot teach the practice of architecture itself. This contradiction suggests the existence of a nebulous space between teaching and learning in architecture.

Multiple questions arise from such reflections: how can one learn the practice of architecture? How is operational knowledge transferred from the teacher to learners? In this paper, we explore three crucial elements of this learning and teaching context: the nature of the relationship teacher-learner, the physical space of the studio, and the pedagogy of learning-by-doing.

Although at the core of the design studio setting and of design education, the teacher-student interaction is hard to be defined due to the complex and multifaceted nature of the practice of architecture and its extensive relying on implicit kind of knowledge (Ferreira, Christiaans & Almendra, 2016). The more traditional type of relationship is the master-apprentice (Schön, 1983; Sennett, 2008), born in the French Ecole des Beaux-Arts with roots in the medieval guilds. This is a teacher-centred dynamic in which the transfer of knowledge relies mainly on admiration and emulation for the teacher's word and work. Another type of relationship is the one mentor-mentee. In this case, conversation and emotional engagement become crucial for the learning process. This student-centred dynamic (Hareli, 2015) flourishes in trust and requires shared values and time to be developed (Oluwole Folorunso, Clement & Ajulo, Dunsin, 2018). Moreover, this instructor supports the student in the familiarization process into the professional community and culture (Goldsmith, 2002). Focusing on the critical understanding of the design process rather than on its outcomes, Koolhaas (1991) interprets the role of the teacher as an empowerer, providing students with tools to interpret, explore and transform the given circumstances rather than create more or less masterful buildings. On a similar note, Schön (1985) understands the teacher as a coach helping students in reflecting on what they are doing to solve problems. The way the relationship student-learner is established and undertaken has a considerable impact on the learning process. The second relevant aspect is the role that the physical space of the studio plays in enabling and unfolding the process of learning and teaching architecture. When reflecting on the design process and how architects think, it becomes manifest the role that the body plays in materialising ideas (Pallasmaa, 2009). Thinking also resides in our hands, which are not only means to translate ideas from the mind to the physical world but also entities capable of imagination (Pallasmaa, 2009; Bachelard, 1957). In the theory of the extended brain, Clark and Chalmers (1998) suggest that the brain is not only within the body but also in the immediate space

outside where one can manipulate symbols and external objects, including physical objects and technological resources. Therefore, the traditional imagery of the architect at the drawing table can be considered as a paradigm of the extended brain, the very place of the generation of design (Emmons, 2016). Consequently, teacher, students, and their close environment generate a space of collective design thinking that enables the transfer of knowledge. Diving into this shared locus of thought students can learn architecture, through observation, emulation, and iteration.

The third element is the learning-by-doing pedagogy, which involves students in a cyclic process of making, testing, changing, refining. The design process itself is an iterative one, a circular-conversational process of testing until one arrives at something that satisfies their desires (Glanville, 1999). The role of the teacher is to guide students in such a process.

The three discussed aspects find their place in the architectural design studio, the very space of learning the practice of architecture (Goldschmidt, 2010; Schön, 1985). The teacher guides students in working on their practical design exercises within an environment that aims to simulate the professional studio setting, although simplified. Furthermore, the studio serves as a unique opportunity to observe and investigate the design process itself. It requires teachers to articulate what the matter of design is, to clarify what it is that they are actually doing when they design (Schön, 1985), to make explicit the tacit knowledge (Polanyi, 1964) embedded in their practice, and to be able to articulate that knowledge to students.

The task for the design teacher is, therefore, a rather difficult one, having the responsibility to communicate an obscure and often incommunicable matter to students. Moreover, design teachers address such a challenging task relying on their own hunch and intuition, learning from the practice of teaching itself.

These observations point out the necessity for specific training in design studio teaching, in order for teachers to perform more effectively. Interest in this matter has increased as shown by the recent establishment of an academic training addressing architectural pedagogies (http://www.eaae.be/event/teaching-teachers-education-key/).

Within this debate, we bring to the attention the relevance of the practice-based PhD in training for teaching in design disciplines and as a compass in navigating through the incommunicable.   The practice-based PhD is an original investigation undertaken through designing and producing new knowledge by means of practice and exploring modes of practice while practising. This PhD is, therefore, concerned with the nature of practice itself, including all its multifaceted aspects such as designing, teaching, and researching, and produces knowledge that has operational significance.   In this context, practice is studied as an activity rather than an 'object' (Glanville & van Schaik, 2013) since reflection for practitioners is something that happens in action (Schön,1983). Teaching, as one of the aspects of practice, is simultaneously object and method for the inquiry.   There are several interpretations of how a practice-based PhD might be pursued. Here we refer to the program developed by RMIT University. Such

program, developed over the last 20 years, served as a reference for numerous other universities in Australia and Europe and its value and impact on professional and academic realms has been the focus of two research projects in both the European and Australian contexts (http://adapt-r.eu/; https://dap-r.info/about).   One of the goals of this PhD is to make explicit and communicable what lies on the implicit level of the practice, therefore, it can foster a hermeneutics of the practice helping the communication between teacher and students.   As a consequence of the reflective nature of such inquiry system, practitioners develop a greater awareness of their practising methods and techniques. Their hunches and urges surface and become actionable elements both in teaching and practice. The meta-level perspective developed during the PhD enables practitioners to focus on their design processes as well as on the outcomes. Looking at the processes and knowing how they work for them, gives them the ability to understand how it can work for others and makes them more able to sustain and guide the students' learning development.   Researching into their practice can be a tool for teachers to not only unveil and strengthen the knowledge embedded in the practice and systematise that knowledge into a research framework (Anonymous, 2018) but also to become more aware of their practice of teaching, to better understand what is the matter of design and how to articulate it and make it explicit for students. Robust confidence derives from the clarity in articulating what their practice is and by this consciousness of their position within their communities of practice and society.   During the PhD, benefiting of the several occasions in which they are required to talk about their practice, practitioners cultivate new and more coherent ways to talk about their work, not only to clients, with the goal of persuading them, but also to peers to actually make evident their research and methods and this new ability would then affect their relationship and communication with the students. In conclusion, as a result of the transformative nature of the practice-based PhD, practitioners are provided with a newly repurposed set of tools to navigate through the incommunicable aspects of teaching architecture. In this sense,, the practice-based PhD can be considered a valid training for design studio teaching in architectural higher education.

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Educational Philosophy about the HUNCH II

Friday, March 29, 2019
11:00-12:30

No Time to Think: A Theory about What Architects do in the Age of Artificial Intelligence

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History tells us that the nine-square-grid did not ignite the education of an architect[1], blobitecture did not stifle it[2], and DIY software is not killing the profession[3]. Instead, the duration of time allotted to aggregate knowledge and implement research in learning and practice is under attack. At risk is the logic for how humans cede cognitive praxes to machines[4]. In other words, for space thinkers and designers, the time to output results is vastly shrinking and challenging the ways we teach, learn and gain the ability to apply innovative research outputs mindfully. Should no time to evaluate and assimilate the particularities of our cognitive experiences in meaningful ways, worry us? The answer is Yes! Primarily because at the crux of this response lies the claim that Artificial Intelligence [AI] and deep learning are computational systems capable of evolutionary acts and random mutations that will continuously deliver optimal answers upon request. How? And in what ways? Will Embracing artificial intelligence in Architecture (AIA 2018) concede that design development, construction documents, and building construction are mundane task machines can execute in the absence of design innovators?

This paper insists that math and statics alone will not suffice to support the assertions that architects will benefit from AI[5]. In contrast, the paper joins this discussion by critically examining the interplay of teaching, slow learning, and research processes embedded in studio culture across design offices, academia, and making labs. Mostly to address the formation of future praxes as we reach a new crossroad with far-reaching consequences in determining the kinds of pedagogy and tools we ought to embrace in learning about executing a task and those that we will need to foster and expand to protect abstract reasoning[6]. So far, AI has minimized the role of an education based on patterns and memorization; thus, we look to narrate two opposing approaches in collaborative learning and teaching that exalts reasoning and mindful acts from the lens of innovation.

We began by defying attacks about slow learning and slow outputting to ignite a studio-base project about the interplay of input and output. We test this idea by tackling the meaning of data and by analyzing a sequence of repetitive-task as output. From tinkering with the exercise, we appraised mindful interactions between machines and humans, to help all of us uncover how certain situations yield errors. We see the value in learning from un-deterministic outputs, because information matters, so we asked _Can miss-inform inputs formulated from observing, practicing, and repeating task as a collective yield improve outputs? In many ways, the outcomes succeeded and failed,

but the knowledge serviced our ability to abstract new queries. The procedure was similar to data mining, which is vastly applied when search engines look for specific pieces of information and where over time algorithms are set to rank outputs statistically from recognized patterns rather than abstract thinking. But, while our exercise incorporated methods for sorting and indexing data, it also noted that humans deviate from machine learning capabilities by intuitively acting abstractly. These differentiations are the new essentials to foster and augmented human's performances in areas where algorithmic functions based on pattern recognition have yet to go.

Independently, to unfold the idea that quantification dominates AI's practices, a semester-long studio moved to examine the rhetoric that AI can help architects improve, inform and impact the quality of everyday life in a timely format. Starting with the fact that point zero, zero, zero three percent of Americans are registered architects[7], the studio visualizes how ninety-nine point ninety-nine percent of America's built environment is like a junkyard filled with lots of insignificant parts and a few gems. For architects, there are real risks involved in trusting machine learning, especially if deep reinforcement learning systems confront scenarios that differ from repetitive solutions which are often superficial and easily imputed into a pattern recognition system[8]. For example, the housing crisis, where few models of innovation exist and where built patterns fail to respond to human needs appropriately. Here, starting with an intense series of conversations among artists, construction professionals, CEO's, lawmakers and city officials and in conjunction with practicing architects and stakeholders, the semester-long studio sought to respond to the housing epidemic and to emphasize the rarity of intelligent design solutions. The goal made apparent that there are only a handful of real build solutions currently servicing this crisis and that these examples are unable to counteract the illogical responses played and replayed in real life. Architecture is a scarcity and not an everyday commodity. Observing reality increasingly challenges both the future effectiveness of AI and the planned output of housing. Both give rise to seize the role of the architect and to design intently with meaning, value, and for the quality of life; aspects that machine learning are unable to yield attentively.   Mostly this paper recognizes that AI is not in the business of delivering mindful spaces or interested in improving the quality of lives. Machine trainers input their reality as is and as patterns that correlate to images. AI is, therefore, only able to identify trends yet incapable of recognizing novel examples or act upon them innovatively. Through our work we are confronting an additional realization, one that is least known and underway now, as machines are heralded to become superior executors to humans, and that is, that the expertise of future architects remains one of the mindful designers with or without the aid of AI. Our presentation will evidence these realizations using procedures that are either bypassing, addressing or coming to grips with the perspective that an architect's education, research, and future practices are not merely at risk of irrelevance but must quickly determine how to improve mindful learning techniques in design schools. Additionally, the presentation will defend the position that spatial design praxes differentiate humans from machines and justify that the education of an architect remains one of slow learning and of abstracted determinations that apply valuable outputs to service humanity.

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Spatial Network Analysis_The Decision-Making Process
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This scholarly presentation addresses how a design studio engaged professional developments in the field of architecture, using urban data analytics as a driving force for the decision-making process. Fostering creative thinking and developing diverse perspectives of the design process are common inadequacies and challenges for market-driven practice. As a hallmark of architectural pedagogy, studio-based education focuses on taking a holistic approach to creativity and diversity of thought. In reality, not all of the professional practice can invest in studio-based research phase within the scope and budget of a typical project. This abstract responds to "Why would it be crucial to incorporate such expertise in the academic environment?". The interdisciplinary research between academia and practice strengthen the capacity to expand knowledge and insights; each has something unique to contribute. The exchange between the two entities allows us to blur lines between academia and practice, thus the sphere of architecture will expand.

In collaboration with the Oklahoma City Planning Department and the University Library Maps and Spatial Data, the interdisciplinary team provided extensive research using urban network analysis tools and geographic information systems data. The new transportation system, Oklahoma City Streetcar, was the subject of the research. SPATIAL NETWORK ANALYSIS FOR OKLAHOMA CITY STREETCAR delivered studies on how the future expansion of Streetcars could transform the cityscape for the environment and enhance economically feasible planning strategies. Urban Topological Analysis and Accessibility provided ecological remediation of existing urban areas and reexamined the current course of urban renewal strategies. The project's main investigation was to study the active relationship of transportation and urban form and its organization within the built environment, focusing on the Oklahoma City Streetcar. In order to simulate the impact of the new streetcar system, the network analysis included an accessibility study, service area study, and facility proximity study.   This project examined the Streetcar through Urban Network Analysis, making invisible urban patterns visible by utilizing scientific methods of geo-spatial data analysis. This research

was initially performed as a simulation platform to inform the design and strengthen the future decision-making process. The investigation aims to provide goals for the future direction of urban design guidelines. Research areas include accessibility, walkability, and pedestrian movement analysis by using computational analytic methods. The GIS data was interpreted through analysis of simulation results using computational analysis tools, such as ArcGIS, Urban Network Analysis toolbox for Rhino, and various Grasshopper add-ons for environmental analysis. The project is searching out an optimum prediction to study city networks, both visible and invisible. Tangible networks like Oklahoma City Streetcar and their adaptation are critical elements, increasing demand and use of existing infrastructure. They connect regional nodes while localizing basic needs to reduce driving and interconnect regional and local transport systems to better move users from one city region to another.

Understanding the city via the flow of spatial data and its analysis application simulate the growth of the city and analyze it by urban pattern formation. Several fundamental questions arise: In what ways do elements of urban form begin to affect an urban network? Are there other urban phenomena that contribute to forming an urban network? In cities where growth rate is rapid, transportation systems pose a challenge. How does spatial structuring of the city influence it? Is the analysis valuable? If so, why and who could benefit from its application? How could those factors begin to affect the analysis interpreted by the network analysis?

Specific deliverables for accessibility, walkability, and pedestrian movement analysis were developed and produced. This attempted to answer the fundamental questions above. Simultaneously, it established tangible information on how many surrounding destinations could be reached from the location within a given network radius, based on the types of destinations: transit, businesses, and residences. Three entities were used in the research reports: balancing different uses and the urban landscape, commuter flow and gravitational force, and socio-economic dynamics. This simulation, Urban Topological Analysis, and Accessibility proposed ecological remediation of existing urban areas and reexamined the current course of urban renewal strategies, in this case, Oklahoma City Streetcar.

During the research project with the OKC Planning Department, the team strived to include community members in the decision-making process. Communicating effectively is imperative for any type of research, but working with non-expert stakeholders posed unique challenges. In order to explore broader solutions and achieve faster feedback, it is critical to design an effective way of interacting not only within the team but also with the community. In response to this need, the proposed research grant, INTERACTIVE PODIUM was awarded by the Office of the Vice President for Research at Oklahoma State University. This proposal is for Research Project Grants in Humanities-, Arts-, and Design-Based Disciplines based on the intellectual significance and/or artistic merit of the project, including the project's potential contribution to the field and potential impact. This project aims to enhance interdisciplinary research and communication by using projected augmented reality (AR) technology to create a visual platform for interaction between users. This data visualization tool provides planning analysis for the built

environment, from interior space to cityscapes. City planning and spatial analysis of complex interior programs like schools, hospitals, and manufacturing facilities will be immensely enhanced by this visual, intuitive, and interactive research tool.

Data-driven research methods of analyzing and generating urban space are not the only solution to incorporating the expertise of professional practice into the academic environment. However, this interdisciplinary project provided clues for developing an effective platform to bring diverse entities together. The level of complexity in the future of the profession demands an asynchronous planning approach to accommodate various aspects and disciplines in current urban issues. This complements current architectural research and urban planning methods, while generative methods continue to evolve in the spectrum of architecture in general.

Dialectical Pedagogies: A Research-based Design Approach
> Loukia Tsafoulia, City College of New York
> Severino Alfonso, Universidad Politécnica de Madrid

Today globalization, digital technologies, an increasingly market-driven education and environmental concerns are among the most powerful forces reshaping academia. The growing presence of research in architecture education is a consequence -among other reasons- of the increasing implementation of a polytechnic academic agenda in the schools of architecture in the United States since the late 19th century. This direction has been received with skepticism by historians and the professional realm alike. Nevertheless, over the past two decades, new research programs have been initiated by several academic institutions, and existing programs have adapted to emphasize collaborative, project-based research, exhibitions, and publications. Given the fluctuating character of architecture education, or as Joan Ockman refers to, its syncretic nature, being set under the auspices of the Beaux Arts versus the Polytechnic models, and under architecture education versus its practice, we are deemed to ask at what point are we in the current moment and what are the prospects of these reconciliations. What are the kinds of questions we should be asking and we haven't been asking? We are in sync with the possibilities of a "third way" that is based on more synthetic and dialectical thinking, against the above mentioned dichotomy, and between design as a creative process and research as a scientific one.

The presentation and consequent paper will address the methods employed and the experience gained as part of a research-based, advanced architecture design studio and a correlated seminar that the authors have developed and taught during the 2018 academic year. The courses manifest the current pedagogical shift from individual design theses towards research-based design studios as well as towards the hybridization of seminar and laboratory course structures respectively. As pilot courses, both syllabi addressed experimental processes of testing propositions via a combination of design and research including hands-on making and history and theory curricular components. The studio course titled Informational Systems & Conversational Machines: Design as Conversation, investigated physical space as an informational

environment and as a system of interactive parts. Likewise, the seminar course titled Reflections: Mapping, Syntax & the Machine, researched, constructed and critiqued real scale installations focusing on performative, environmental and communicative aspects. Both courses conducted experiments that shifted the design invention towards shaping physical space through real-time data, systematization and information processing.   To situate the courses' aspirations within a historical context, the paper constructs a lineage of architectural education focusing on the integration of research in architecture schools in North America. Specifically, addressing the turn to a new "behavioral approach" from the 1950s-on that emulated the social-scientific research model. The architecture´s discourse interest in linguistic, behavioral, computational, communicational, cybernetic diagrams reveals the techno-social tendency as a response to aesthetic formalism. A problem-solving and relevance-seeking mentality transformed the very sense of the discipline. Under this context, the paper considers two overlapping perspectives. First, it concentrates on design as the core of the discipline and second, reflects on the field's porosity towards a wide range of forces, opening it to multidisciplinary horizons.   Overall, our propositive and questioning line is distilled into three parts:

Importing and Exporting: Flows of knowledge.
The text analyzes architectural education's practice of absorbing and "importing" methods, theories, and discourses from its exterior. By using the above mentioned courses as case studies, the paper aims to decipher the flows of knowledge in architecture not only as a receptor discipline but most importantly those occurring from our discipline outwards. While these courses -interdiscursive in nature- import knowledge both from the liberal sciences and from the technical disciplines, their aim is to also generate knowledge applicable to a wider disciplinary context in an effort to slowly divert its current course. The research component in both courses is therefore aimed to answer questions positioned in the periphery of the architectural realm. With that, student research analyzed the increased global flow of data and information in our environments which has densified our reflections on questions of politics and economic exchange, expanding the reach of design from the realm of physical forms, into modes of interaction in social spaces. The uncertain impact of economic and other sociocultural dynamics plays as strong a role now as it did in the past. In the present though we have an overflowing fountain of knowledge but the meaning of the word architecture is uncertain. The courses reinscribe architecture's meanings (or claim architecture's "renaturalization") within this nebulous context.

Fixing the Deficit of Historical Consciousness.
How will the semi-autonomous manifestos of the second half of the 20th century, in particular those corresponding with the academic turn of the 1960s and 1970s, be materialized by the technically savvy, cosmopolitan fixated, and interdisciplinary driven contemporary scholars? The traditional core studio model could absorb in great part an inseparable history course component, not just to support it but to re-adjust the academic agenda. Echoing Van Wyck Brooks "usable" past concept - Reinhold Martin in his On the Uses and Disadvantages of Architecture for History, emphasizes, that the world today suffers from a debilitating deficit of historical consciousness, he proposes

that academia, should focus on nurturing historical consciousness rather than on erecting foundations for practice. As a response, the paper makes a case of divergent design studio models. The courses in that sense, explored the development of computing and interactive machines in their historical context juxtaposed to the use of advanced digital tools today. History and theory became the drivers for the conceptualization and production of the design products, rather just a side note and a parallel encounter to the courses' dynamics. Even further, the courses aspired to post-theorize the end products themselves, thus generating transferable knowledge and critical inquiry.

Our Contemporary Struggles.
Finally, it is imperative for architecture to actively expand its ideological and critical role in regards to the contemporary political, economical and social struggles including the devaluation of the democratic principles, the return to a nationalist and protectionist global agenda, the increasing domestic and global inequality, and the effects of climate change. It has come again the time to rethink our academic tools by balancing the present technologist problem-solving approach, not by rejecting it but by embracing its content while bending its direction especially in regards to the new meanings of architecture in the 21st century. The syllabi encouraged students to think how their proposals could be attuned to the environment by interrogating the theories of what architecture does for the society and the life after architecture. In doing so, the courses developed strategies as a response to social, experiential and environmental considerations. Through the design of reciprocal systems, the courses provided alternative ways for addressing every day context-based issues that are less dependent on the global information industry, data power structures, and monopolies.

Cartographic Sublime
   Frances Hsu, Aalto University
   Peter Lang, Royal Institute of Art Stockholm

Kant distinguishes two notions of the sublime: the mathematically sublime and the dynamically sublime. In the case of both notions, the experience of the sublime consists in a feeling of the superiority of our own power of reason, as a supersensible faculty, over nature. (Stanford Encyclopedia of Philosophy)

The purpose of this paper is to update the ongoing cartographic project of contemporary architecture. It will address how recent documentation practices and mapping strategies used by the practice teacher/researcher are suspended between critical theory and hermeneutics. The notion that mapping is now essential to design--in a way it wasn't 2 decades ago--is a change significant for teaching, research and practice.

Mapping is part of a broader inquiry into the impact of empirical approaches on architectural teaching, research and practice (Gissen, 2008). Alternative histories of urban form based on narratives of material flow were written by engineers and historians of the postwar period. (See the Metabolism of Cities, Wolman,1956. In The

Natural History of Urbanization (1965) Louis Mumford addressed the concurrent and interdependent development of cities and agriculture.) As architectural attention shifted "from object to field" in the mid-nineteen nineties, landscape urbanism emerged. For Stan Allen, the field condition both mediated and was mediated by the "real." Architectural, sociological and philosophical texts including (but not limited to) "Programming the Urban Surface" (Wall, 1999), A Thousand Years of Nonlinear History (DeLanda, 1997) and The Rise of Network Society (Castells, 1996) were introduced to architectural discourse and teaching in the US and Britain. This knowledge base, supplementing architectural discourses on the projective and performative functions of built form and its environments were transferred to new models of practice.   In architectural design, the diagrammatic/cartographic representation of metabolisms, network flows, infrastructures, polymorphous conditions and fluidities in diagrams, maps and plans was viewed as progressive and critical, belying not only more traditional focus on meaning and significance in the built environment but also the conventional purpose of architectural training in modern Western societies in which students acquired knowledge and understanding of pre-existing entities, events and practices. Maps challenged the static conventions of architectural drawing and opened possibilities for temporal, locative understandings of knowledge in relationship to space and place. Mapping technologies are seminal to the conceptualization and engagement of the urban as transdisciplinary and systemic, and as such became the new design paradigm for swerving away from the "classical" tectonic, typological, compositional, and technological themes in architectural education.

This paper addresses how map-making may be both analytical and expressive, a critical and interpretive tool for speculating upon processes of change linking research and design exploration. Maps may convey ideas and be deployed to reveal the hypothetical, experimental dimension of information and data. Fact-based research can support systematic yet speculative proposals for architectural forms and fictions projected into the near future. Rather than the master plan used by urban planners, the activity of such mapping works through techniques of observation and representation and serves as a starting point for broader pedagogical and practical investigations into human perception and an understanding of the world. Information/data can be graphically and verbally articulated through narratives and ideas at the scales of region, settlement, building and body. Modes of mapping and their processes and ideas, conceived as essential to design, function less as an accurate description or illustration of territory and more as an entry into the possibilities and prejudices that inhabit a certain place at a certain time.   Work conducted by the authors of this paper also grounds research for students in live mapping, a sort of subjective ephemeral geography across urban and peripheral territory marked by extreme and continual societal and environmental transformations. Mapping here is a creative and critical strategy to not only analyze current territories but also create a project for architecture that includes yet moves beyond critique, a polemical operation that might work to disrupt (or at least respond to) the effects of neoliberal logics on the city and on design education by challenging the way society pictures itself, from inside its own familiar yet alienating landscapes.

Incubating HUNCHES about Pressing Issues into Academia II

Friday, March 29, 2019
11:00-12:30

Design Practise and Scholarly Research: Combining the Best of Both Worlds
        Katelijn Quartier, Universiteit Hasselt

Establishing new academic programs is a long-term process. Short-term but intensive programs, as a summer school for example, are easier in setting up and can also be used as experimental hubs (thinker spaces). To this end, in 2014, we organized the first Summer School in Seamless Retail Design in cooperation with a few international partners. We presented the students with the challenge to create retail environments which seamlessly combine the spatial (physical environment), the digital and the human (experiential) factor. This challenge is not chosen randomly. Indeed, both consumer behavior and the consumer itself have changed considerably in recent years, making it difficult for retailers to keep up and stay relevant. In this context, three clear phenomena can be distinguished today. Firstly, consumers are more aware, and they also want to become more aware of their own buying behavior and exactly what they consume (eg. product origin, who sells it, which price is worth it, ...). And, secondly, this "awareness" also reflects on their shopping behaviour and time. The scarce time they have and want to spend on shopping, they wan't to spend it in a nice environment meeting up to either fun shopping or run shopping. While fun shopping presumable leads to more experiential environments, run shopping asks for a more efficient approach. The third phenomenon is related to the digital revolution. In addition to the consumer's urge - certainly the 'younger' generation - to be constantly 'connected', consumers can now look up all relevant information at all times (eg. prices, product details, availability, ...) and they can often also immediately proceed to an online purchase. All three phenomena obviously cause a fundamental change in the context within which retailers will have to function in the near future. Students are getting familiar with these issues during the summer school and they learn to anticipate on such issues. It is clear that retailers are challenged today to stay relevant in todays climate. To this end, we invite students from different backgrounds and disciplines with a relation to retailing and design (interior design, architecture, product design, marketing, graphic design and media design) to collectively reflect, during one week, on these challenges and opportunities of the store of the future.

Objectives
Due to the aforementioned phenomena, that still continue to change, the summer school keeps on developing content-wise. During the last years, though, we have developed a steady framework in which three objectives are key:
   • working in interdisciplinary teams of both students and teachers
   • combining expertise from practitioners with theoretical input from researchers
   • working with a real life design assignment

Implementation
The first objective, the interdisciplinary character, we guard by composing an interdisciplinary teaching team on the one hand, and work with other universities with other disciplines, on the other. Partner universities are not only asked to provide input (eg. sending a teacher) they are also asked to send students to participate. Of course, the latter can not be guaranteed, but so far, we managed to get at least four different disciplines each year (interior architecture, architecture, product design, marketing). Also many different cultural backgrounds are present. During the last edition students as far as from Hong Kong and Brazil participated. The experts (from practise) we invite to host a theoretical course or a work-shop are selected carefully: one product developer teaching the students a consumer centred approach; a marketeer/brand designer, helping the students to get a grip on branding; several retail designers helping the students to translate the concept into a feasible design. As for the students, they work in small, heterogeneous groups, interdisciplinary teams that are carefully composed based on the their study background. Hence, the learning curve does not only come from experts, it also comes from the interaction within a group.

The second objective, combining expertise, is inherent present in the program we offer. In the morning sessions students will be introduced to state-of-the-art knowledge from both academics and experienced practitioners. Later that day and in the afternoon, the students are immersed in the matter during design work-shops. Students are coached in the design studio by a team of design supervisors (local and international) together with the invited experts from the morning. During the whole summer school a researcher curates the designworkshops, giving the students specific small design assignments accompanied with design tools (developed within PhD research) that help building up the design from idea, to concept, to design.

We want students to reflect on the store of tomorrow. To this end, for our third objective, each year we select a large scale local retailer that has a need that fits our programme: needing a new (concept) store, integrating all media. By having students from a different social context and from various relevant disciplines collaborating on such a concrete design assignment, we wish to come to refreshing and innovative ideas. The retailer actively takes part in the programme by (1) feeding our students with the necessary knowledge and insights, (2) be part of the jury (which is set up as a pitch) at the end of the summer school providing the students with valuable feed-back. For international students to get an understanding of the Flemish (retail) culture and to get some inspiration we organise a study visit to Antwerp. We also visit a retail technology hub where students can experience the latest technology.

Outcome
In this summer school we aim for the following competencies to be achieved:
- the students are familiar with 'retail design' as a multidisciplinary domain
- students learn to collaborate with students from other disciplines and backgrounds on concrete assignments

- students learn to convert (state-of-the-art) knowledge from practise and research into relevant innovative concepts and designs in a relatively short period of time
- by confronting them with international teachers and the cooperating and living together with an international group of students, they acquire intercultural skills.

Conclusion

Every year the summer school is evaluated by both the teaching team and the students. First, over the years, the surveys indicated that the students find the inter-disciplinary character beneficial for thinking outside the box. They enjoy having to work and live together with the entire group during one week and getting emerged in the discipline of retail design. More specific for the last edition (summer 2018), the students liked the way the summer school was set-up with the balance between theory and practice, the small design assignments cumulating into one design, and the input from the experts. Second, a critical assessment of the last two editions by both the academic stakeholders involved and the practitioners indicate that the strong elements are the inter-disciplinary and the international character. Also feeding the students with both academic knowledge - giving them insights in the latest research results - as practice - providing them design methodologies and thinking models. Third, we ourselves noticed that the creativity of the design students together with the more theoretical view and communication skills of marketing students pushed the design one step forward towards more well-founded and relevant outcomes.

In sum, we managed to set up a course that integrates imagination, creativity, fascination, skills with the best available knowledge in the matter (coming from practise and research), in a way it is imbedded in today's socio-economy.

The full paper will reflect on six years of developing this course. Starting from a body of literature that founded the first years, to additional insights to what and why it has become what it is today.   We will also have a flash-forward to how we are trying to develop this formula into a traveling summer school so more students, and teachers, are able to learn from this approach.

Float: Designing for the Rise in Sea Level
    Camilo Cerro, American University of Sharjah

According to the United Nations, presently, about 54% of the world's population lives in urban areas, with the number expected to increase to 66% by 2050. Urban areas which are ill prepared to deal with their present population needs will have to develop and manage; housing, healthcare, education, transportation, infrastructure and food production for an additional 2.5 billion people. With three-quarters of the world's megalopolis by the sea and 80% of people living within 60 miles of the coast, sea level rise will force a new way of thinking about urban development. Managing urban areas has become one of the most important development challenges of the 21st century. In the UAE specifically, there arenearly 1,300 kilometers of coastline. Approximately 85% of the population and over 90% of the infrastructure are located within several meters of

sea level in low-lying coastal areas. This poses a very specific urban problem of relocation. But not all relocation will need to be done inland. The potential for floating architecture is a very real possibility to help solve some of the problems brought on by the rise in sea level. This is why at the American University of Sharjah, we have been studying this issue and other sustainability related opportunities in a series of courses that started in 2014 with a studio course set in Cambodia. Students lived with a floating community in the Tong le Sap lake for a month, studying vernacular floatation systems to inform the development of proposals for floating dwelling studies. This semester (Spring 2018), a fifth year architecture studio set up to transfer specific urban functions to the water within protected areas in the UAE. The aim of the studio was to start looking at possible implementation of floating systems within everyday functions to start a discussion of the potential of this technologies and the feasibility of its use at both an industrial and commercial level. The idea was to develop a series systemic interdependent sustainable designs hybridizing complex relationships between distinct functions in environments above and below water. This paper will cover the methodology implemented to start tackling this subjects in the studio environment with the aim to create awareness in designers and the public in general.

Keywords: Systemic interdependence, floating dwelling, urban development, vernacular floatation systems.

The Detroit Conrail Greenway: A speculative case of urban wilderness and placemaking
Anirban Adhya, Lawrence Technological University

Inner Circle Greenway: Overview
The city is an ecological system; the urban environment is a natural phenomenon, a habitat, a medium of expression, and a forum for action. This framework is examined using an advanced design studio studying urban wilderness--fragments of nature in a city--responding to processes of human-nature interaction. The study examines how ideas of nature influence the way spaces are perceived, designed, built, and managed; how natural processes and urban systems interact and what are the consequences for health, placemaking, and ethics. Given these conflicting attitudes and logics, how can architects identify opportunities to develop strategies for incorporating diverse habitats into the built environment? How can these habitats not only perform as such but also produce public resonance and visibility in the city?

The studio investigates these questions by considering the Detroit Conrail Greenway (an 8.3-mile long abandoned Conrail railroad property and a key part of the recently conceived Inner Circle Greenway in Detroit) as a case study. Using human-nature relationship and ecological well-being, the goal of the project is to explore placemaking through integration of density, mobility and open space. Students engage at multiple scales of Southeast Michigan, Detroit, and the green corridor, from proposing urban, landscape, and infrastructural interventions to developing comprehensive ecological system of the "urban wilderness." The studio outcomes range from alternate transport system, phyto-remediation addressing brownfield issues, and medium density housing

proposals as part of transit-oriented developments. Through the projects, sustainable urbanism is conceived as an ecological model of public health, placemaking, and social ethics.

The Detroit Inner Circle Greenway (ICG) is a transformative transportation and economic development project that forges connections across dispersed Detroit-area neighborhoods long separated by freeways and underserved by disjointed transit. Through the development of 31.5 miles of pedestrian and bike paths, the Inner Circle Greenway will connect to local and regional transportation systems, creating a continuous loop from the Detroit River to Eight Mile Road (Figure 1). The Inner Circle Greenway will link to 186 miles of existing non-motorized bike lanes and bike routes to complete a total of 243 miles of safe, non-motorized routes across greater Detroit. Transforming the existing fragmented transportation system, the Inner Circle Greenway acts as a spine bringing life to the existing non-motorized and transit network. Most significantly, this project will improve economic competitiveness, enhance quality of life for residents, and leverage recent investments.

In 2016, the Advanced Design Studio focused on the issue of Detroit's urban transformation: de-industrialization, wilderness, and re-densification, by preparing an urban design and development proposition for the Detroit Conrail Greenway by (1) envisioning a new and alternate transportation system, (2) re-imagining green infrastructure public space projects, and (3) rethinking new forms of medium-density development. In this Advanced Design Studio, students examined urban wilderness: fragments of nature in a city and respond to processes of human-nature interaction: how ideas of nature influence the way spaces are perceived, designed, built, and managed; how natural processes and urban systems interact and what are the consequences for health, placemaking, and ethics. Given these conflicting attitudes and logic, the focus was on testing: How can architects and urban designers identify opportunities to develop strategies for incorporating diverse habitats into the built environment? How can these habitats not only perform as such but also produce public resonance and visibility in the city? This studio investigated these questions by considering buildings, major urban structures, and infrastructure as opportunities for design and appropriation, to enable co-species habitation. Students developed design projects at multiple scales, from proposing interventions to developing comprehensive ecological system of the "urban wilderness."

The project builds on the Inner Circle Greenway (ICG) proposal in Detroit, a recently conceived planning effort by the City of Detroit for a 31.5 mile loop of greenway, a system of off-street and on-street networks of protected bike lanes connecting adjacent communities to jobs, schools, and public services (City of Detroit, 2015). Within the geographic context of the ICG, the studio will focus on the Conrail part of the greenway, a blighted, abandoned section of the former Conrail railroad right-of-way. The studio will complement present efforts by the City and organizations like the Detroit Greenways Coalition by focusing on planning and design options on the Conrail section through a pedagogic framework of Urban Wilderness, examining interrelationships between

nature and the city. Students will explore diverse urban strategies including mobility, open space, and density to develop planning and design proposals at multiple scales.

Studio Hypothesis
The studio involved specific profiles of ecology and health. The city is an ecological system; the urban environment is a natural phenomenon, a habitat, a medium of expression, and a forum for action. The working hypothesis of the studio is that sustainable urbanism as an ecological model of public health, placemaking, and social ethics. Within this context, the studio is framed by two critical aspects within questions of sustainable urbanism relevant to urban wilderness: human-nature integration and ecological well-being.

Studio Pedagogy and Methodology
The studio was structured around three goals of research, process, and proposition. Design methodology were derived based on this structure. First, research of existing condition was an important step. Students observed, documented, and analyzed different types of urban wilderness (landscape) and its relationship with human occupation (density) using the Conrail as a fragment of nature in the city. This established the basis of the design process.

Second, design and decision-making process was critical. Specifically, students used an ecology-based methodology to explore human-nature integration, underlying principles, and inherent opportunities specifically through questions of density and open space in the abandoned Conrail right-of-way. This allowed the students to develop alternate propositions based on specific research positions and design strategies to test and push those positions.

Third, proposition and dissemination of specific outcomes were crucial. Students designed a multipurpose greenway system intervening at multiple scales of human occupation based on existing patterns and critical ecological framework of density and open space. Propositions were presented at the urban scale of the Inner Circle Greenway and Conrail right-of-way as well as the neighborhood/district scale of specific nodes on the greenway around critical assets.

Studio Findings
The Inner Circle Greenway is a 31.5 mile pedestrian and bike path that connects Detroit to a region wide system of pedestrian trails. The Conrail portion of the ICG is an 8.3 mile missing link in the trail. The site is a former freight rail line that transported materials and resources for producing automobiles in Detroit. The rail line and adjacent property were left abandoned when manufacturing left the city of Detroit at the end of the 20th century. Today the abandoned property is overgrown, polluted and prone to vagrancy

Public health
Pollution and contaminants are present on the Conrail site because of the materials that were transported along the rails, as well as the materials that were used to build the rail.

Creosote, lead, arsenic, and many other toxins can be found in the soil on the property. The contaminants are also present in the soil on adjacent industrial properties, which in many cases have also been abandoned.

For decades this contamination problem has been ignored. However, many neighborhoods are adjacent to these former industrial sites and the rail line. The ground contamination has spread and continues to spread into the soils underneath neighborhoods and into the ground water. The spread of pollutants not only effects the surrounding neighborhoods and residences but anyone in contact with soil, water or air in the city. The effects of this can be seen in Detroit health data: there are higher cases of asthma, lead poisoning and cancer within the city. Proposals address this problem through remediation strategies and green infrastructure development coupled with new density.

Place and placemaking
Greater greenway connectivity is an important factor in the Conrail Greenway proposals. This will exponentially multiply opportunities for biking and non-motorized movement in the city. Biking culture is on the rise in Detroit, with the city topping the list of cities in the United States with the biggest increase in bicycle commuters (McLead 2015). This is reflected in cycling trends like the weekly Slow Roll events with upwards of 4,000 participants, increase in investment in on-street biking infrastructure, and development of off-street biking proposals, healthy living initiatives through running, bicycling and bicycle safety like the Tour De-Troit, and 34 documented neighborhood and church based bicycle clubs. The design proposals sought to capture this momentum in biking culture to develop a comprehensive mobility network that becomes an everyday component of living in the city. Biking thus become a lens to think about neighborhoods, healthy living, and connection to a quality place and processes of placemaking.

Social ethics
Within the topical framework, students discovered ways of designing for human occupants by considering how non-motorized transit can improve everyday life, while simultaneously providing for the needs of non-human occupants. Urban infrastructure thus becomes an opportunity to address questions of safety, convenience, and accessibility. Furthermore, understanding this infrastructure as urban wilderness implies that fundamental necessities like healthy food and affordable shelter should be accessible to different sections of society.

Border Heritage: Urban Waterfronts and Port Infrastructures
Davide Servente, University of Genoa
Carmen Andriani, University of Genoa
Beatrice Moretti, University of Genoa

Context With a development of over 8,000 kilometers[1], Italian coasts present alternating natural and anthropized features, waterfronts and ports, infrastructures and residual spaces, production facilities and pieces of scattered settlement, linear

conurbations. The continuous changes in the margin between land and water have profoundly changed the image and use of this complex and artificial territory between the consolidated city and the changing landscapes of the coastline. A privileged field of applied research is the limit between city and port. In the vast catalog of coastal landscapes, ports represent the most radical modification: over time, logistic-commercial and infrastructural dynamics have determined the birth of a new artificial territory, an intermediate landscape in its own right of being, with its own and recurrent characteristics, which legitimizes the search for interpretative tools, project methodologies, and specifically dedicated implementation techniques. In this sense, the Ligurian context becomes paradigmatic. Liguria (330 kilometers of coastline and four commercial ports: Genoa, La Spezia, Savona, and Vado Ligure) is an interesting field of research both from a local point of view and from a wider perspective. The Ligurian port infrastructure system is connected to the main European channels. It is strategic with regard to both the territorial government and to regional and national economic development: infrastructures intended not only as transport routes but as systems whose transformations over time have conditioned the design of the urban fabric in a relationship of mutual influence.

The continuous updating of port facilities has led to thedisposal of buildings and infrastructure complexes that are no longer useful; a list that is growing and that frees various artifacts from their functions, once exclusively dedicated to port activities. The state of obsolescence, of disuse or abandonment these buildings are in has produced a modification of the boundary between city and port, reinforcing the figure of the 'space-between' that is no longer functional to the port but has not yet been claimed by urban functionality.

The sum of these artifacts constitutes a sequence of shared goods in which recurring values can be recognized even in very different and distant contexts. While seemingly incoherent and irregular, they present settling rules and aggregative principles that make them emblematic in terms of city-port planning. Often forgotten by the instruments of government, these 'samples' are an opportunity for redevelopment for large portions of the built environment with effects of urban regeneration in the immediate surroundings. Because of their location within the city, their constructive peculiarities these buildings are holders of a historical-cultural record and simultaneously examples of a homogeneous and recurring set of manufactured artifacts. Their complexity is given not only by the size which is often exceptional compared to the context in which they are inserted, but by the relationships that could be established with the main neighboring emergencies. Therefore, the consistency of this set produces not a sterile but active[2] concept of heritage that manifests itself through a widespread homogeneity of building features. All this brings to the foreground the relationship between protection and innovation, recognizing the extraordinary potential of this patrimonial system: a new landscape made dynamic by the port and by its liminal position, one that is implicitly unstable and literally situated between two 'states'.

Method

The Coastal Design Lab-active since 2014 - is a permanent design studio held within the Master course in Architecture of the Department of Architecture and Design of the University of Genoa. Particular attention is given to the intermediate areas between the city and the port, which undergo a constant process of modification due to the disposal of buildings, the obsolescence of use of open spaces and infrastructures and the state of total abandonment of some complexes, despite their importance. The CDL's research and teaching experience is based on an integrated, interdisciplinary and multiscale approach to the design project: a path aimed at training and educating architects to enable them to operate critically in coastal contexts with particular attention to city-port systems.

In the last three years, the research activity of the CDL has focused on the reuse of large buildings in the Port of Genoa and in the Military Arsenal of La Spezia[3]. These are mentioned as examples of the city-port building heritage, capable of activating virtuous processes of urban regeneration.Thanks to their intrinsic value (structural, typological, formal, etc.), these artifacts are strategic to test all the tools of the design process and undermine both the hierarchical order of the scales and the separation of skills. Field surveys, study models and detailed insights developed in parallel to larger-scale reasoning are some of the basic tools of the educational process. By referring to the definition of a control instrument capable of regarding all the parts that make up the object of study, these samples have been useful to identify and refine a method of analysis and intervention that allows an active reintegration into the city, while supporting each individual case with its peculiar features.

The foundation of the CDL's teaching is the belief that each modification requires a clear assumption of responsibility on behalf of the designer with respect to the context it belongs to, which is inevitably altered: every action, applied to even the smallest of elements, reverberates on the surrounding context causing non-negligible shifts of meaning. The new life cycle of great artifacts, identified as case studies, gives way to a new notion of heritage: what we define as such is something that changes continuously, in its uses, in its relations with the surroundings and in the set of meanings that we attribute to them.

Application
The border between city and port is one of the identifying themes of the Genoa School, and it is paradigmatic to tackle complex projects in regards to the design scales and the disciplinary aspects involved. The work of the CDL intervenes on current issues: in fact, during this current year of research the design studio has conducted explorations on the infrastructural system of the lower Val Polcevera[4] of Genoa, along the namesake stream and including the numerous critical issues that the tragic collapse of the Viaduct caused in August 2018. These events have highlighted the need for an overall redesign of the ecosystem of the valley, which is innerved starting from the torrents' main course, as it is confirmed to be an environmental infrastructure of great strategic potential. Following the collapse of the Viaduct, the CDLhas worked on the complete rehabilitation of the Val Polcevera valley layout, including architectural, industrial, environmental and infrastructural emergencies. Once again, the methodology developed along the

coastline has been applied here to confront the complexity of a valley that is both orthogonal to the sea but which also features aspects that trace a sort of 'inner coast' along the fragile banks of the Polcevera, while recurring elements can be found to repeat despite the topographical differences.

This case study can also be classified as Border Heritage, including a latent but no less important reasoning on the 'infrastructure heritage' that the collapse of Morandi's work and its controversial destiny have triggered internationally.

The work on the border is, therefore, a precise didactic choice aimed at increasing scientific research in the context of territorial discontinuities and places of marginality. Indeed, it is believed that precisely where local duties overlap, instruments blur their mandates: this opens up an unprecedented field of exploration for the design courses attended by final-year students of the Master's Degree Program in Architecture. By nature, the boundary provides for the presence of two or more entities that converge and diverge just along the shared edge. This dual configuration gives rise to an inevitable and complicated dialogue that the CDL has faced by confronting the competent authorities (city and port) and opening a wider debate within the appropriate scientific research centers, questioning scholars and operators in the field, the CDL, and proposing its own argumentation and project synthesis to a public and possibly shared debate.

[1] See the Istituto Superiore per la Protezione e la Ricerca Ambientale, *Statoambiente. Tematiche* 2014-2015. Mare e ambiente costiero.
[2] On the concept of heritage, see Andriani, C. (edited by), *Il patrimonio e l'abititare, Donzelli*, Rome, 2010.
[3] The Hennebique granary silos were built in the port of Genoa in 1901. After the abandonment in the seventies, the complex was the subject of scientific studies and research aimed at favouring an overall redevelopment. The Enel thermoelectric plant, built in the 1930s, has completed its production cycle in 2017. The Navy Military Arsenal of La Spezia, which contains the Naval Technical Museum, was built between 1862 and 1869 and has been involved for some years by a process of reorganization and partial decommissioning of areas.
[4] Val Polcevera, one of the main valleys of Genoa, takes its name from the Polcevera torrent which delimits the historic core of the city to the west. The valley is crossed by the main city infrastructures: obligatory transit to Europe and, for the port of Genoa, the natural corridor towards the Atlantic side, above all the Rotterdam seaport.

Toward Public Sector Practice
      Cathi Ho Schar, University of Hawaii At Manoa

In 2016, the University of Hawaii at Manoa School of Architecture established the University of Hawaii Community Design Center (UHCDC) in close collaboration with a state legislator to meet the needs of the state government. This unique governmental alignment introduced a novel form of community design that opened up new academic and extramural space for the school and university, in the form of a public sector practice (top-down), as distinct from a public interest practice (bottom-up). This paper presents the results of three years of continuous dialogue with the state legislature and over $2 million in contracts with state agencies, by reflecting on the transformative

effects of this public sector practice on design pedagogy and practice. This reflection follows three case study courses: an undergraduate basic design studio; an undergraduate advanced design studio; and an advanced professional practice course, all required within the undergraduate and graduate curricula. Each case study details the teaching, research, and service-learning benefits that flowed from each public sector partnership, focusing on the potential of this model to strengthen and enrich professional education. The evolution of these courses tracks the transition from project to problem-based learning, pre-design to pre-procurement studies, and a move toward applying equitable academic and design rigor to marginalized project typologies—e.g. infrastructure, adaptive reuse, repair and maintenance. The courses also integrate expanded methodologies including financial analysis, development studies, community engagement, and service design (including design thinking, strategy, identity, policy, and communication)—all in response to the demands of the public sector.   More importantly, the dividends from UHCDC's public-public partnership with the state identifies an opportunity area for design education - design in government. Among all of the services that state governments provide—social, cultural, political, economic, and ecological expertise and analysis, for example—design thinking and design services are typically missing. However, there is an emerging trend toward the integration of government and design thinking, facilitated by the demand for solutions to wicked problems, greater citizen engagement, participatory democracy, innovative leadership practices, and organizational change. Back in 2002, the Danish government established MindLab, an innovation unit within the ministries of Business and Growth, Employment, and Children and Education. In Singapore, the Prime Minister's Public Service Division established the Design Thinking Unit, with the mission to involve users in redesigning policies and services. In the U.S., this integration is reflected in governmental partnerships with design-based for-profit companies like IDEO; non-profits like Bloomberg Philanthropies; and other government initiated innovation centers that engage human-centered methodologies. UHCDC follows these precedents, offering the resources of the university as a multi-disciplinary in-house design unit for the state of Hawaii, and a new model for architectural practice and education.

Applying Academics' HUNCHES into Reality II

Friday, March 29, 2019
11:00-12:30

Shaping Public Space, in Public, with the Public: The City as Classroom
      Antje Steinmuller, California College of the Arts
      Christopher Falliers, California College of the Arts

"From within a hard shell swells the soft bubble, a billowing urban room hatched in the back of a delivery van. This genie in a lamp makes for instant theater, and shows how wind in a bag can make instant architecture. But this is no ordinary pop-up circus tent. Rather than being consumed as entertainment, like a circus act or the dead matter of architecture, Spacebuster consumes its viewers, and they in turn transform it."
-Gideon Fink Shapiro, "Spacebusting"

Producing Public Space Protocols of public space production have been evolving in recent years, with the public no longer solely the end user of an architect-designed space. Raumlabor's Spacebuster, described by Shapiro in the quote above, is one in growing number of urban space activation projects that combine tactics for citizen initiative, collaboration, and shared stewardship into what can best be described as a contemporary 'commons'. This type of 'public space-as-commons' involves members of the public in a process of rediscovery, and reappropriation, of urban space according to their needs and desires. The form of public space as the domain of architects is increasingly replaced by a need to structure a process of formation - a forum that positions architects as collaborators with the public, designing sites, artifacts, and protocols for citizen engagement. This paper puts forward an engaged teaching methodology for public space formation that operates in public and with the public. It leverages the city as a classroom within which architecture and design students develop inclusive protocols for shaping new urban commons.

Relational Art meets Design Activism
The evolution of such protocols draws from two spheres of influence - relational art, and design activism. In his book Relational Aesthetics [1998], Nicolas Bourriaud identifies art practices that position the artist as the 'catalyst of exchange' or 'producer of an encounter', with outcomes that often take the form of lived social environments. At a time when social relationships are increasingly predictable and commercialized, Bourriaud highlights artistic production that takes the form of meetings, encounters, events, various types of collaboration between people and places of gathering. On display as the aesthetic 'object/subject' are the human interactions they engender: Rikrit Tiravanja's 1992 Thai dinner inside 303 Gallery in New York employ a combination of a kitchen environment and the social protocols of cooking to catalyze/display familial interactions between gallery visitors. Futurefarmers' "Ethnobotanical Station" employs a combination of artifacts (a mobile cart and information gathering equipment) and workshops as a platform to engender the interaction of people with their environment through collective knowledge building. The

mobile artifact allows for flexible engagement with different locations, people, and over time. The unfolded cart acts as both attractor and visual display of the knowledge gathered. While these examples rely on the presence of the artist as actor/catalyst for interaction, Candy Chang's "I Wish This Was" project placed artifacts into urban space in order to record citizens' ideas. Inviting citizens' engagement in shaping their neighborhoods beyond the limitations of community meetings, Chang posted stickers in empty storefronts and abandoned urban spaces as an invitation for residents to share their desires for these locations. While not focused on direct social interaction, the stickers triggered collective communication as residents commented on the notes of others over time. These artifacts and/or actions positioned in public act as catalysts for social exchange. They exist in public to be played out by the public. The second sphere of influence is rooted in design practices that merge design advocacy and activism with short-term catalytic interventions. Jeremy Till's term "Spatial Agency" takes as its basis Lefebvre's argument that space is inherently a social product, a condition produced collectively, inherently dynamic, and continually changing over time. Spatial agency, here, is framed as an act of transformation, engaging and negotiating a given (spatial) condition with intent. Till adopts Anthony Gidden's notion of "acting otherwise", acting with willingness to leave behind the boundaries of established knowledge, as a prerequisite to a process of learning that is not determined by hierarchy and professional norms. This process opens the door to collectively acquiring knowledge through engagement with a world in which everyone holds specific 'expert knowledge'. This engaged, social production of space can be traced in Archigram's 1969 "Instant City" protocols. Symbolized as a floating airship equipped with technology and props, an embodied catalytic agent instigates events, interaction, community, and education through temporary events, and then leaves behind an altered collective infrastructure for future more durable social interactions. In a micro-version of an instant city, Santiago Cirugeda's "Urban Recipes" widely distribute instructions to deploy small 'architectures' as a means for citizens to appropriate and activate urban space within their neighborhood. In his project "Taking the Street", Cirugeda leverages conventional mechanisms of city code through detailed DIY instructions on how to apply for a dumpster permit, equip the dumpster space with other micro-architectures, and create spaces for socializing and play. Translating Instant City's envisioned long-term effects into recent planning for Tempelhof Airport in Berlin, the collective Raumlabor defined so-called "Pioneer Fields" on the airfield where citizens could initiate, build, and host a range of activities during a three-year period. Acknowledging local residents as 'experts', these temporary pioneer uses on the airfield were intended to produce lessons for what might be suitable and desirable programs to be evolved longer-term. Beyond the design of catalytic mechanisms like Cirugeda's DYI instructions or Raumlabor's Pioneer Field process, spatial designers today have also taken on the role of cultural managers of urban space, perhaps best embodied by Envelope A+D's PROXY SF, a site for temporary food businesses, retail, and cultural events in adapted shipping containers, Envelope A+D designs responsive programming with neighborhood leaders, sponsors changing public art, and runs the long-term management. In these projects, design tactics for the production of public space involve architects embedding themselves within a community, designing processes for engagement, and initiating evolving form and programming.

Learning to Be a Catalyst
Acknowledging that most public space projects require months if not years of work and dialog, we have developed a teaching methodology that leverages the format of intensive multi-week travel studios, plugs into ongoing public space or commons projects, and partners with local collective/designer/architects and community non-profits. This allows the studio to act as an itinerant, engaged think tank for the development of short-term catalytic interventions with potential lasting effects. The classroom, class structure, and class outcomes are altered. The classroom, in this case, is replaced by the city, with workspace embedded in or near the space we work on. Students experience the space and community on a daily basis. This local community becomes an integral part of the classroom, with an introduction facilitated by local collaborators. The class structure, correspondingly, is changed from a studio about the place, to a daily engagement with the place and its residents. Rather than designing a fixed vision for the place, the design task is three-fold, combining the design of a platform for public engagement (an artifact), the structure of a dialog with the public (a protocol), and the choreography of gatherings that directly catalyze interaction with and between residents (an event). Aimed at creating an environment for conversation, the production of an artifact could entail building a space for dialog (like Raumlabor's Spacebuster), or developing an object that provokes interaction (like Futurefarmers' Ethnobotanical Station). While the design of this artifact most directly demands conventional architectural expert knowledge, the development of a protocol challenges students to "act otherwise"(per Giddens), drawing on local social conventions to facilitate and structure social interactions (Tiravanja's Thai Food dinner), initiate action (Cirugeda's DIY instructions), and prompt dialog between others (like Candy Chang's "I Wish This Was" stickers). Lastly, the development of events necessitates thinking through temporal processes and possible scenarios -whether designers engage directly (Futurefarmers' Ethnobiological Station workshops) or others guide events within a designed framework (Raumlabor's Pioneer Fields).

Practice in Public
This paper discusses three studios that test this methodology. These case studies begin with site visits to public space projects in the respective city, introducing students to their history, formative mechanisms, and use patterns. In partnership with local organizations and communities, students are led through exercises to develop an artifact, to design protocols for engagement, and to lead a public event. In one of the studios -a community garden/learning project for refugees- students designed a mobile cart/kiosk as social interstice. In another studio, a storefront became a canvas for a collective drawing event on the future of the neighborhood. In the third studio, a TEDx event served as the framework for the design of deployable props that support regular events in a neighborhood commons space. The authors draw lessons on the potentials and limitations of this teaching practice in terms of its format, approach, and outcome as a contemporary learning environment that builds hands-on knowledge around public space production and citizen engagement. The classroom, class content, and architectural learning will be shown as more immediate, more complex, and, ultimately,

more directly preparing students to work with the public in (and on) the public space of the city.

Jinni or Universe in a Pocket? The Philosophies and Methodologies of Acts of Doing
Antonio Petrov, University of Texas At San Antonio

This is a project that we see as having multiple moments of impact, multiple moments of realization, as opposed to a multi-year project that then has a conclusion at the end.
-Mohsen Mostafavi

Context
According to the Census, every day officially more than 66 people begin a new life in San Antonio, TX--unofficial estimates are closer to 150 people. It not only makes the seventh-largest city in the US with 63.8 percent Latino population the fastest-growing currently but with an estimated 1.4 million people moving to San Antonio within the next 25 years, the city's population will double. In the shadow of these transformations San Antonio has nationally the second-highest percentage of people living in poverty, and this is not a new problem but a tragic continuation of a long history of deeply entrenched inequities.

Pilot Project
In collaboration with Southside First Economic Development Council, tech company Cityflag, and Local Initiatives Support Corporation, we started a pilot project with the goal to economically revitalize two of the most impoverished communities in the nation: The Mission San Jose and Quintana Rd. Communities. Despite their proximity to a UNESCO World Heritage Site, with an estimated regional impact of $150 million, and Port San Antonio, with an impact of $5.3 billion, these significant economic assets are not activating the environment.

Problem
Our research has shown that understanding poverty-stricken communities is challenging. Very little accurate data exists for communities like Quintana and Mission San Jose. We blindly trust "big data," despite evidence that it is conditioned, and tied to business, commercial, and political interests. Biased and misleading statistical information further contributes to the disparity between actual realities and how they conflict with perceived realities. In *Weapons of Math Destruction*, Cathy O'Neil describes the systemic issues of math-powered applications in which "many of these models encoded human prejudice, misunderstanding, and bias into the software systems that increasingly managed our lives." The current system not only follows its own interests, defining "own realities and using them to justify their results,"[1] but this practice leads to biases against the poor while the rich are getting richer.

Although data-injustice and the context—both feed into the problem or have created it-- are the entrance into the discussion, in contention are the ways architecture and institutions act on emerging frontiers. Historically, we have been slow to respond. On

the one hand, this is because architecture's self-assurance has replaced common sense with formulations like sustainability, resiliency, and other eco-modernist idioms. Where on the other, institutionally hermetic and discursive terms have substituted visions with dialectics. While the project is explored through "moments of impact" and "moments of realization," the argument is developed in the grey areas between disciplines and paradigms.

Philosophy

Addressing pressing realities, however, is not about continuing the practice of floating between new definitions of the problem as a response. Instead, it is a matter of the accessibility of those realities in order to determine the scope of finding solutions. In Wilhelm Weischedel's *Die Philosophische Hintertreppe*, the German philosopher employs "the back stair" as a philosophical metaphor to address the inflections the world is undergoing today. From Thales to Wittgenstein, in thirty-four vignettes Weischedel illustrates how the power of (creating new) knowledge lies in the way we approach it. To access the spheres of these thinkers, he suggests two possible approaches: the front and the back stair. Weischedel describes the front stairs as a formal path to "the apartment" of important philosophers. Whereas the ascent using the back [stairs]--akin to entering a home through the back entrance--is considered an existential encounter, a "come as you are" experience in which philosophy unfolds as a way of life and then as a way of thinking. Although both ascents lead to the same destination, the back breaks free from traditional orders while also establishing a framework to rethink philosophy as a whole. His analogy, however, also exemplifies that there are alternatives. It is not simply about the binary choice which of the two paths to take up, but more essentially about the philosophy of the "third condition," as those who go up the stairs also have to come down. In focus are how insights gained on "the upper floors" (of this world) only become vital when they are brought back down and translated into acts on the "ground floor of daily life," or even "the cellars of reality." Only then is the descent as philosophical as the ascent.

Acts of Doing

In my work, "acts of doing" have taken on a new resonance. My inquiries evolve with the complexities and constantly changing dynamics of disciplinary and institutional transformations, aiming to expand the ways through which architecture advances culture and society. As epistemology, philosophical and methodological framework, shaped by design-ethos, political cause, entrepreneurship, and social and civic innovation, acts carried by the pilot project have led to various moments of impact and realization. As lessons, however, these encounters have been like a Jinni or a universe in a pocket, giving space to stories that keep evolving and changing shape, assuming any number of guises with many new viewpoints every time they are told. Although the project is ongoing and we have not drawn any conclusions yet, the non-chronological encounters—some are short, long, or only one sentence—exemplify the "teachers hunch" and how moving from plot to plot, protagonist to protagonist, and sometimes even from world to world determines a teacher's reality.

Unconditioned Data

Our worlds are defined by data, data transfers, and networks. But rather than accepting these data environments as a priori condition, within the pilot we argued for the emergence of new data, new data collection mechanisms, methodologies, and new environments as a result of it. With the community residents at the center of our community-based engagement strategy, we developed comprehensive surveys through which data reflected the environment as it is, instead of a result of mathematical constructions and conditional frameworks justifying the results. Of course, our research and the surveys recovered new insights about the communities and the data generated reflected a familiar space--one that was understood, experienced, and engaged. Not only was the data a route to a layered understanding, but the data analysis also revealed a spatiality that was reflective of the community's DNA.

Lingua Franca
Building on Weischedel's analogy we also needed "a bridge" to transcend barriers between residents, policymakers, and stakeholders. *Lingua franca* acted as a frame of reference for engagement and communication, but also determined a space through which we recovered new vectors of action, social currency, and agency. It exemplified the inquiry and how the act of mobilizing or enacting with/through social and civic innovation has helped carry messages in addition to building trust, which unlocked "street-level" credibility and capacities in activating citizen insight.

Data Tree of Life
Represented by the metaphor of the "tree of life" we visually conveyed the importance of collecting the data for the community as a genesis moment or the moment when a new tree grows. The visualization of the "data tree of life" reflected the concept, data structure, and the entire survey, all organized hierarchically from seed to stem, branches, leaves, and ultimately the fruit representing answers to the survey questions. While the Data Tree of Life is the overarching framework for our data collection, civic-tech exemplifies the second leg of the hybrid civic engagement strategy. Parallel to door-to-door surveys we also launched the development of a mobile application. The goal of the app was to broaden the act of engagement through all available physical and digital channels; it not only mapped acts of engagement but it also listened, stored, and tracked data, and generated content through digital social listening.

Metrics
How do we measure success? The success of projects and institutions is not measured by(academic) excellence alone. At the forefront of design, research, and critical practice, it is also vital to develop channels to explore grey areas. If we consider Weischedel's philosophy, the process is the pathway that leads to two staircases. Which one do we choose to go up, and how are we coming back down? Today, however, this is not enough. The frontiers have shifted and the challenges facing the future have become more complex and broader in scope. How do we spawn new ways of learning, knowledge distribution, active thinking, and new forms of communication, while also eliciting courage and inspiring new vectors of action, social and political currency? I argue this is not only about transcending existing orders, cracking a mold

and breaking free from it, but it also is a statement about the preparedness of students and how social, civic, and humanistic viewpoints give balance to the gains of intellectual competency in engaging with the complexities intrinsic to the "whole" environment, even if these pressing realities fall outside of the disciplinary scope of architecture. Only then can we perceive coming into consciousness as a moment by which we may measure whether or not we have succeeded in preparing the next generation beyond disciplinary and institutional limitations.

Critical Service-Learning Pedagogy in Architectural Education
Silvina Lopez Barrera, Mississippi State University

In 1996 Boyer and Mitgang conducted an independent study of architectural education and practice and they highlighted the importance of civic engagement in the architecture field. They recommended four broad strategies to be pursued by architectural education: "establish a climate for engagement, clarify the public benefits of architecture, promote the creation of new knowledge, and stress the critical importance of ethical professional behavior" (Boyer & Mitgang, 1996, p. 133). Furthermore, they recommended architecture schools to develop community service programs connecting the schools and the profession to social contexts (Boyer & Mitgang, 1996, pp. 26-28) . Community engagement and community-based projects help students to develop their civic identity and develop life-long human values that are at the core of the architectural education while applying their knowledge and skills in real-life contexts. This pedagogical approach highlights the importance of the role of the designer in society as an agent for social change at community level. Community-based projects engage students with active learning and the practice of design for the public good in our global society. There are diverse definitions and approaches to community engagement and service-learning and their implications have been widely debated in architecture and related design fields. Service-learning as a form of experiential learning and pedagogy connects and strengthens the relationship between community service and academic study. Service-learning seeks to engage students with activities that connect their learning process with human and community needs, balancing student learning and community outcomes (Jacoby 2015, 1-3) . The use of community-based projects and academic learning enables the integration of traditional academic learning with lessons of social responsibility and citizenship (Kim & Abernethy, 2006, pp. 139-153).   Service learning as a pedagogy focuses on experience as a basis for learning and it understands critical reflection as a critical element to facilitate learning. Thus, reflection leads to a deeper understanding of the causes of the need of service and their complex historical, social, economic, environmental, and political implications (Jacoby 2015, 5-6). Its integration of teaching, learning, service, scholarship, and research is at the core of the design professions. This is reflected in the growing number of community design centers across the U.S.; and there is evidence of community-engaged scholarship and service-learning pedagogy efforts in programs and projects within the design fields (architecture, landscape architecture, and planning). However, there is a tendency to approach service-learning without fully addressing issues of social justice, race, and class (Angotti, et al., 2011, pp. 1-16). Jacoby (2015, 8-9) suggests there is a distinction

between "thin" and "thick" forms of service-learning projects. The "thin' version of a service-learning project could superficially address an immediate problem by providing a service to the community but without engaging the community to solve the problem. On the other hand, a "thick" form of a service-learning project involves an active collaboration between students and community to address the causes of the problem, empowering community members to advocate for social change.   Approaches to service-learning can range from field experience where the service component is a consequence of the learning experience, to transformative service-learning processes for students and community using critical pedagogy. This critical pedagogy encourages students to develop a critical understanding of social justice emphasizing empowerment of communities and reciprocity (Schuman, 2006, pp. 1-15). Service-Learning as a critical pedagogy has the potential to transform student's understanding of power dynamics and privilege and their place within the world (Jacoby 2015, 232). Critical pedagogy is based on the understanding that multiple forms of oppression occurs as a consequence of power asymmetries and culture of domination. Freire's work "Pedagogy of Oppressed" (2000) analyses systems of oppression from multidimensional factors such as race, class, gender, culture, language, and ethnicity. In this pedagogy, the oppressed (marginal, disenfranchised) reveal the dynamics of power and dominance to self-empowered to transform the unjust realities (Freire 2000, 54). Dialogical practice is fundamental for the understanding of oppression and it is a key component in the process of learning and knowing (Freire and Macedo 1995). In this process, experiences and identity are linked to power dynamics and history.   On the other hand, as Jacoby highlights, service-learning without an integrated multicultural education may perpetuate systems of oppression reinforcing existing hierarchies, stereotypes and biases (Jacoby 2015, 233). Engaging service-learning without a careful understanding of the root causes of the social problems may encourage privileged students to participate in systems of privilege and inequality without critically reflect upon those systems. Critical Service-learning encourage students to become agents of social change and to use their knowledge, skills, and experience with the community to address social injustices (Mitchell 2008, 51). The field of architecture often presents itself as political neutral and separates itself from social and historical contexts, reinforcing an architecture practice based on the "star architect" model and the signature building. This approach has made difficult the permanence and presence of social-engaged design and community-engaged design in architecture studios where the emphasis is on community collaboration and process (Schuman, 2006, pp. 1-15). As a consequence, to the professionalization of the architecture discipline and its dependency on the interests of the construction industry and real-estate development, the traditional approach to architecture education in studios has overestimated the focus on skills, development, and technical knowledge. This approach gives limited value and time to architectural education as humanistic and liberal arts endeavor limiting its ethical substance (Coleman, 2010, p. 201).   In contrast to 'traditional' approaches, there is a growing number of non-traditional architectural practices that focus on community-based design, highlighting efforts to provide architectural services to communities that need design but cannot afford architectural services (Bell, 2004). Scholars emphasize the importance of recognizing the political implications of architecture education and practice. Gutman (2004, pp. 14-20) highlights the importance for the profession to

engage in political action where architects can address specific issues related to low-income housing design and production while encouraging the expansion of government programs. Community engagement in architectural education presents an opportunity to create a framework for political design where architecture is developed in collaboration with communities and disrupting the status-quo (Gamez & Rogers, 2008, p. 23). This paper explores community-based projects and critical service-learning pedagogy in architecture studios. The inclusion of community-based projects in architecture studios confronts the traditional approach of architecture education by teaching studios highlighting the role of the architect in society and emphasizing community-based design work as a critical enquiry. Through case studies of community-based projects, this paper addresses opportunities and challenges of the use of critical service-learning pedagogy in architectural education, guiding its efforts to provide architectural services to disadvantaged communities. Finally, it discusses the challenges of service-learning recognizing the importance of reciprocity and shared interests as well as the diversity of participants involved.

Action Oriented Design: Bridging the Gap Between Teaching and Practice by Applying Action-Oriented Design Methodology

Karim Najjar, American University of Beirut

As a form of cultural expression as old as humanity's first paintings on the cave walls of Lascaux, architecture is, itself, essential to the human existence. Teaching and architectural practice have therefore been traditionally united in service of human expression within a given community. Throughout history, various schools of thought have defined these stylistic expressions of culture. However, the recent past has shown an unparalleled acceleration in stylistic progression that can no longer be measured in centuries, but rather, in decades- and often even less. This can be attributed to the enormous increase in the mobility and accessibility of information. With globalization having introduced the existence and experience of so many different cultures to people the world over, the overwhelming availability of information over the internet continues to provide designers with limitless possibilities and opportunities. This has consequently challenged the traditional categorization of architecture by stylistic concept and continues to blur the boundaries between teaching and practice as communities transcend the limits of their specific locals. With pedagogy and practice apparently drifting apart, schools of architecture are presently responding to the aforementioned phenomena by bridging the gaps through relevant themes and work in technology, science, and art. These new programs strive for innovation and push the field into new territories by triggering exciting debates and encouraging new speculative design experimentation. However, with architectural practice on the ground hardly capable of keeping up with the fast-past nature of academic innovation, these concepts rarely see the light of day. Because the highly experimental and speculative approaches powering these designs do not often consider the reality of constraints posed by factors such as budget, program, or building law, such design work remains conceptual and is rarely ever implemented. This paper therefore aims to introduce and discuss the benefits of action-oriented design methodology as opportunity in bridging the gap between

pedagogy and practice. Applied successfully to Design Impact Laboratory at the American University of Beirut, such models bring innovative conceptual design work to life through an academic setting. Established in 2016 with the purpose of allowing design innovation to inform community-based projects, DI-Lab has since involved over fifty students in the design and execution of highly innovative projects with a collective construction budget totaling over one million dollars.

The paper begins by highlighting the significance of sharing values between practice and teaching and argues the importance of implementing design innovation in service of the sustainable development of vulnerable communities. The paper then explores DI-Lab's action-oriented methodology by analyzing how the implementation of various student projects were able to bridge the gap between teaching and practice by integrating professionals and beneficiaries into the process. Projects range from a climatically conscious library for Syrian refugees to the rehabilitation of public space through lightweight, tensile structures, all of which emphasize student-centered learning. Unlike the marginal roles afforded by traditional internships at architectural firms, students at DI-lab assume ownership and responsibility for real-life projects from conception to completion. This empowerment consequently impacts the role of the teacher in studio, which is discussed in the second part of the paper. The paper discusses the experiences of students who have personally participated in DI-Lab and concludes by presenting the lessons learned from the process through a discussion of the limits and opportunities afforded by a comprehensive action-oriented research and design approach.

Situated Knowledges: Participatory Design Workshop (PDW) positioned at the Cambodian Mutual Assistance Association in Lowell, Massachusetts
Yazmin Crespo Claudio, Harvard University
Ignacio Cardona, Harvard University
Michael Smith Masis, Harvard University

Donna Haraway discusses situated knowledges as a meaning for feminist objectivity, "limited location" [1] and immediacy. She writes, "It allows us to become answerable for what we learn how to see."[2] Furthermore, because situated knowledges is knowledge positioned in a specific social context, it allows partial points of view rather than a view from above, "from nowhere" [3] making certain experiences valuable to the generation process. Haraway offers the metaphor of vision to discuss situated knowledges, as to underscore local embodiment, partial perspectives and positioning. For Haraway ways of seeing offers the opportunity to make "responsible knowledge claims."[4] Because the views are partial, then these perspectives allow us to make connections among different valuable types of knowledge from those that comes from normative techniques to the felt knowledge that comes from survivability and resist simplification. Similarly, Nestor García Canclini writes, "we need nomad social sciences capable of circulating through the staircase that connect those floors (of different types of knowledge)."[5] A line of thought that presents an interesting walk of proposals and subjects' across an

intellectual debate from particular perspectives.The resolution is not effective; however, the conversations transform the critical process.

An idiom on the wall that reads "knowledge is our superpower" becomes stunningly poignant to any person that visits the Cambodian Mutual Assistance Association (CMAA) building. The CMAA lies at the center of Lowell, Massachusetts, the second largest Cambodian community in the United States. This non-profit organization and community center emerged amidst the resettlement of Cambodian refugees in the 1980s and is now a second home for multiple generations of Cambodian Americans, as well as other marginalized communities in Lowell.

The workshop was organized and conducted through a student volunteer-based participatory design process during the January 2019 winter session at Harvard University Graduate School of Design (GSD). In order to accommodate the extended "family" and enhance the overall activities at the CMAA, the community, students and instructors worked together through partial perspectives and positioning to achieve community consensus on the design, use, and meaning of their "basement". These perspectives comprise points of view from the community members together with normative needs sited in design. In this regard, the challenge is to find an intertwining between different sections of knowledge through different design tools. Indeed, knowledge and technology has shifted the way architecture is practiced; yet many architecture programs holdup in a significant integration of tools, and responsive pedagogies. While alternative practices realize the significance of collaboration, many teaching practices remain rooted in a rigid "view from above" dynamic that doesn't realistically prepare students for the profession. A key design research question ask how can positioning allows the teaching of design to move beyond the mere provision of concepts and allow students, volunteers and instructors opportunities to make connections among different observations (views) and improve the overall built environment? Design solutions are closely tied to situated knowledges as studied to test new methodologies, and approaches that may activate new ways of seeing (designing) space. What initiated with a "pao" or rock-paper-scissors tournament, concluded with the co-creation of three community designed layouts for the space.   Cambodian translation was significant to engage local, social, cultural and historical knowledge. Furthermore, it created a field of interconnections between language, gestures, observation and engagement; one that embraced empowerment. Likewise, cultural insights from the exchanges revealed the importance of the Khmer symbolic relationship between matter and spirit, the spirit of a place, and its symbolic relation with materiality and knowledge. Resultant drawings identify craft inspired by the weaving of traditional Khmer fishing traps, and Cambodian stories, aided the collection of schemes for "Our Place"; a situated participatory design.

[1] Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies*, 14, 3, 1988, pp. 583.
[2] pp. 583.
[3] pp. 589.
[4] pp. 583.
[5] García Canclini, Néstor. *Culturas Híbridas: Estrategias Para Entrar y Salir De La Modernidad*. Editorial Sudamericana, 1992.

The HUNCH and Architectural Pedagogies III

Friday, March 29, 2019
14:30-16:00

Hinges: Articulating the Limits of Inside / Out
Alejandro Borges-Gonzalez, Texas A&M University

This exploration represents an attempt to develop strategies and tactics of design pedagogy in order to better understand the relationship between Architecture, Art and Urban design and their roles in reconfiguring and improving the practice of the discipline of Architecture and its contemporary expression in the 21st-century society. Some questions are put forward: what design studio strategies can be developed to reinvigorate and renovate the relationship between the design studio culture and particular social problems? Can the understanding of Architecture pedagogy through research + interactivity on various levels be part of such strategies/tactics? What represents the foundation of contemporary pedagogy in a vertiginous constant changing global society? What mechanisms of mediation can help us better understand the articulation of the limits between the internal and the external of the studio? And lastly, Can indeterminacy and intuition be incorporated into design pedagogy? The exercise of the discipline of architecture and the space of pedagogy must be a continuous space. This continuity is fundamental to enrich not only the contemporary education and its new demands, but also to significantly enhance the quality of the social space as a reflection of a new society. One fundamental part of understanding social space is the city as its physical projection. Especially the downtown space as a body of research within the city represents an important object of study through interaction from inside the design studio space out. This investigation is based on understanding the limits of architectural/urban interaction from different levels of intervention which explore the idea of how architecture, art, and urban design signify mechanisms of mediation between a globalizing strategy and social interaction as a tactic.

At the beginning of the 21st century, contemporary cultural congestion defines the individual experience, as a result of coexisting with a series of dichotomies such as global / individuality; subjectivity / inter-subjectivity; rationality/irrationality; end of history/genealogy of history, etc. Making Architecture means, among other things, to articulate the different dimensions of society at a particular time.

The design studio culture unfolds around the idea that architecture is a collective discipline but requires an individual drive. The assumption of the student as an independent learner only works if it is used within the studio as fuel to motivate them and as part of a broader pedagogical strategy. It can be translated into particular interests promoted by each student as a means of creating a program that is a reflection of specific groups. The optic of the instructor generates the strategies to follow meanwhile, they work together with the students to define particular tactics.

The Studio Space

This paper will focus on the Career-Change Master Program. Students admitted to this program have no architectural backgrounds. The program is an amalgamation of first-year undergraduate design studio and Master program's requirements. For this reason, it possesses in itself two fundamental conditions. First, the diversity of the areas brought by the students gives a very special focus to the work of the studio since it broadens the limits with which the disciplinary research is approached. Second, such diversity generates a kind of hybrid architectural development since it is the consequence of multiple optics and it is also enriched by an array of perspectives. This approach generates higher social interactions not only in the studio space, but also and more importantly, in their community explorations. Each student turns into an architectonic explorer. They all directly interact with a chosen community based on particular interests and concerns. The origin of such inquiry can be determined by intuition, by a previous interest from their diverse backgrounds outside the field of architecture or an intuitive approach to a specific area of the city, a social or economic problem and even the interest of investigating a particular architectural typology. There is a high level of indeterminacy and chance in the basic structure of the studio.

They must identify a problem as an opportunity for them to explore, interact, question, and subsequently develop an architectural proposal within the framework of the design studio and the level on the program based on specific academic objectives. The Hunch becomes the driving force of the studio. But it is not a single hunch. It is a combined result of "individual hunches" and a series of collective interpretations of opportunities, ideas and programs that come together in a unique process with the city as a referential frame of the work. Strategy and tactic define a very particular design studio as a Hinge. Its program is an open system in which both the student and the instructor interpret them as tools for scrutiny and practice of the discipline. Therefore, the compilation of all proposals developed by each group of students every semester constitutes an undetermined collection of programs that constantly vary since it depends on particular approaches. In this case, the role of the teacher/instructor is to develop strategies based on intuition and experience and direct the particular investigations in such a way that all are framed by the level of design studio general objectives and particular outcomes. Due to the nature of this studio and its conceptual approach, Precedent analysis is constituted by a wide variety of projects and ideas, different each semester, thanks to which all [teacher included] learn from and are part of individual proposals. The scale, nature and typology of the precedent analysis is the result of the interaction with the student.

Design+Practice/Research
Design + Practice is understood as a type of research which explores the relationships between the space production process and the results of such as the product of a certain attitude of inquiry. The methods and techniques used in this exploration are developed in order to identify and reflect upon the architectural artifact's inherent spatial and structural orders. There is an emphasis on the design process itself, developing and expanding those procedures and instruments used which enable a particular approach of the genesis of form and the conceptualization of space. Both the artwork

and three-dimensional elements are understood as precise tools that must be related both conceptually and physically to the generated object. In addition to this, all research is focused on an analog and structural understanding of the architectural artifact and its graphic representation, which serves as a fundamental resource-ground which provides referential information to different kinds of orders in their visual form. The sequence of exercises developed in the studio define the design process and they are based on concepts ranging from the abstract and ideal, to the functionally specific and finally to what is considered contextual and programmatically located and therefore concrete.

The Hinge

This studio, as a kind of hinge, proposes the development of experiences in the construction of the city, in urban / suburban areas, either formal or informal spaces, incorporating identity, collective memory, history, industrial development, and technology as resources for architectural processes and as re-activators of territory not only in domestic /private space, but also in collective / public spaces. Under an optic of action/cooperation, we are able to develop strategies and dynamics of participation that emphasize individual and collective identity from different communities that are involved in the design process. It develops tools and processes of action/cooperation that enables and empower people with their own surroundings and its transformation, in which every Architect has the possibility of leading the process.

Beginning with a social, programmatic and spatial analysis of a specific area of the city, it is necessary to generate a research attitude through a progressive interpretation of a problem, which allow us to generate a first approximation as a basis for a spatial development that can be able to transform and become a significant architectural project and a relevant event. Urban and rural areas are seen through the notion of a "text" which can be read and interpreted with the idea of identifying and exposing existing systems of spatial and social orders present in a specific part of the city, in order to comprehend its generating principles, spatial logics, programmatic components, and social fabrics, creating a base of information that can be translated into an Architectural project. Based on the notion of a Hinge, as an articulation of the academic space and the practice space, the studio has investigated the role of social participatory tactics in the re-appropriation of space, specifically in downtown areas as a frame and as a means to transform and incorporate public spaces as part of a larger urban strategy. This interaction has focused on contemporary notions of public and private and other dichotomies and has developed different processes for reprogramming city centers to generate a positive impact on social change. The "Hinge" studio has developed a wide variety of projects, urban interventions, hybrid-programed architectural proposals to many communities in which the idea of the academic space and the practice-research space have merged into a continuum body of knowledge.

Figuring in Friction: A Pedagogical Framework for Foundational Studios

Adam Modesitt, Tulane University
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Introduction

Foundational architecture pedagogy is an exercise in defining, distilling, and imparting fundamentals of while simultaneously equipping students with the instruments necessary for advancing beyond the fundamentals. It is a truism, perhaps, that architectural education should prioritize conceptual development, interpretive skills, and critical thinking alongside calisthenic exercises in precision, craft, and rigor. Architectural education should not merely teach tools, vocationally. Yet the field continues to adopt an expanding array of computational tools of increasing complexity. Beginning design studios must impart the fundamentals while simultaneously preparing students for the onset professional practice in which they will face an expanding, fragmented landscape of architectural mediums and tools.

Critical questions for pedagogy include the degree to which tool instruction and shoptalk is positioned within the studio environment. Is pedagogy strengthened by the integration of tool instruction within the studio, or should it be siloed outside, in dedicated courses? Among new mediums, which best serve as vehicles for imparting design principles? Which modes of production, historically established or new and experimental, best prepare students for professional practice? Does a focused, targeted adoption of specific tools foster conceptual development, or should a wide-range of tools be sampled? Lastly, amid these questions, where can students find space to experiment, assume risk, and begin to establish their own positions?

This paper proposes a pedagogical framework for situating these questions within a foundational architecture studio, and presents results from a new core curriculum developed at [Architecture School]. A seminal foundational studio pedagogy developed a decade ago at [Architecture School] is revisited and reappraised in the context of the revised curriculum. The current and past curricula share common roots. Similar lesson structures were adopted to facilitate systematic comparisons between approaches and make legible new outcomes. The new pedagogy positions the friction generated amidst the application of multiple tools and mediums as the primary site for invention and critical development.

Methodology & Outcomes

Since the development of projection drawing in the era of Leon Battista Alberti, architectural invention has been intrinsically coupled with the medium in which architects labor. This coupling is well-formulated by Robin Evans in a series of critical texts. In one significant example, he describes the origins and manipulations of dome of the Royal Chapel, Anet, by Philibert de l'Orme. Elaborating on discrepancies between the rational geometric forms of the dome and its floor tile pattern he writes, "It would be as crude to insist on the architect's unfettered imagination as the true source of forms, as it would to portray the drawing technique alone as the fount of formal invention. The point is that the imagination and the technique [work] well together, the one enlarging

the other." [Evans] Here, Evans is referring specifically to the technique of orthographic projection as the drawing technique for designing the Royal Chapel, the technology of de l'Orme's era. Without the technique of orthographic projection, the geometric manipulations within the Royal Chapel would be unimaginable.

In our present era, orthographic projection remains essential, but modes of drawing production have greatly expanded. Computational software tools automate and quicken formerly intensive drawing tasks. The circles inscribed on the dome of the Royal Chapel, for example, can now be arrayed and projected within a matter of seconds. Variants, iterations, and alternatives options can quickly follow, dramatically expanding possibilities for production. Stan Allen describes the computer as a "superpowerful drawing machine," rather than a radical paradigm shift in modes of the architectural production. [Tehrani] Others, such as John May, position the computer as an image processor, in which the former mediums of drawing and photography are supplanted by a new digital medium and cease to meaningfully exist as formerly defined. [May] The pedagogical framework established for the core curriculum at [Architecture School] assumes an agnostic approach to these questions, and seeks to allow space for students to determine their own answers—or if these questions even matter at all. The pedagogy asserts instead that there remains room for play within Evans' observation that imagination and technique work in concert. Philibert de l'Orme may have conceived of the dome as a rational geometric deployment of sphere and inscribed circles, but the cropped projected pattern on the floor illuminates the generative friction of working between mediums and techniques.

Our present era is characterized by an expanded field of tools and techniques, and correspondingly greater possibilities for friction. In professional practice, friction is often framed as a problem within architectural production. There has been much discussion of interoperability among platforms, integrated BIM, and seamless project delivery workflows. While there exist legitimate financial reasons for mitigating friction in professional practice, friction generates important space for invention within the discipline.

A decade ago, a foundational studio at [Architecture School] introduced digital collage as a means of transforming hand-drawings quickly and intuitively to generate new narratives for subsequent design exercises. The deliberately prescribed sequence of projects began with an examination of mechanical devices as tactile artifacts to be analyzed and recorded. The devices consisted of handheld tools, physically operable and typically vintage (a little removal and unfamiliarity prompts imagination and seeing anew). Potato-ricers, fish-skinners, and radish-dicers were infused with new meaning through precision hardline hand-drawings—palimpsests that celebrated the triumphant toils of students' labors. The drawings were then reworked through digital image collage, amplifying tactile qualities and interpretive depth. Photography and digital manipulation of the tool drawings prompted a series of spatial investigations through physical models which were again photographed and served as the subject of digital reinterpretation. Throughout the semester, a series of lessons sequentially introduced

new techniques, each layering upon one another to increase in scale and complexity, eventually paving the way for the pivot to the design of a small building.

The revised foundational pedagogy adopts tools as objects of study within a similar lesson arc, but introduces a nonlinear approach to digital and analog modes of production. The new curriculum situates student work strategically in the space between mediums, between freehand sketching and descriptive geometry, between physical models and digital models, between orthographic projection and computational procedures (such as boolean operations). Additionally, strategies for graphic informational layering are incorporated from the onset. Notations and annotations are introduced as both graphic devices and strategies for illustrating interpretive depth, as an analogue to hand drawings's traditional tactile relationship with the paper (grit, smudges, and affectation of the hand). The trace of process is no longer a byproduct of a single medium but subject to control, to be constructed and composed, pushing the limitations of one medium while drawing facility from another. Fragmentation of tools and mediums needn't correspond to a fragmentation of process and development. Rather, the friction among tools and mediums establishes stable territory for production and development in a context in which tools, techniques, and mediums are themselves unstable. This paper reviews and analyzes current outcomes through comparison with the earlier foundational curriculum, specifically assessing the developmental pace of technical expertise, dialog and critical thinking, and students' agency within their own process.

Conclusions
Architectural education must teach the tools and instruments of design. Individual tools and instruments can be determined, prescribed, and instructed. Yet it is the friction generated amidst the application of multiple tools and instruments that is the site of invention. It is the space in-between that generates new knowledge emerges, and in which intuition, ideas, and architecture operate.

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Learning Frontiers: Concourse for Ideas
Patrick Macasaet, RMIT University

Design studios are concourses for ideas. They are spaces and arenas for learning and discovery that assemble and allow the formation of new knowledge. To enable it, students should be encouraged to constantly experiment, speculate, reimagine, critique and contribute within the agendas of the design studio whilst engaged with the wider world of ideas and issues beyond the studio. Studio leaders are curators, tacticians and facilitators of learning environments. This paper will reflect on a series of industry

partnered and research-led design studios I led in partnership with the RMIT School of Education as clients, RMIT Property Services and Professor Vivian Mitsogianni titled 'Learning Frontiers: RMIT Urban High School' project.

The Learning Frontiers design studios were a series of Master of Architecture design studios that ran in semesters one and two in 2018. The studios sought out to simultaneously explore two primary threads of investigations. On one hand, the studio explored my research interest in 'typological procedural experiments' as a design methodology and on another level; an exploration on speculative propositions and alternative prototypical spatial and formal models for learning environments to open up design conversations for the development of RMIT's Urban High School. The design studios consistently navigated and negotiated between the difficult terrain of the speculative and the practical brief of the client. As educators and practitioner-academics, how can we curate a learning environment that performs as a design studio 'think-tank' that simultaneously addresses the speculative ambitions of the studio (and studio leader) whilst engaging with the practicalities of the real-world brief of the client and as well as the aspirations of various stakeholders? What role do educators play when a multitude of voices and influences penetrate the design studio walls?   At RMIT Architecture, semesters are typically structured within 16 weeks (two of these weeks are dedicated for moderation and end of semester exhibition). In weeks 6-8, mid-semester reviews are held, and final presentations are typically on week 14; both with invited external critiques. Whilst leading these industry-partnered design studios, the development of five key attributes have played a crucial role in facilitating a speculative and ideas-led environment whilst engaged with real world scenarios. These are:

1.   Forget Refinement: The aggressive pursuit of ideas.
2.   Stop Doing: Two steps back, three steps forward.
3.   All In: The iterative design development process
4.   The Polyphonic Studio.
5.   Knowledge Capture and the Book of MEAT.

Forget Refinement: The aggressive pursuit of ideas.
The first half of semester is dedicated to a lot of doing, testing and experimenting. They are rigorous and aggressive in the pursuit of ideas. Each week focused on a specific set of isolated investigations (i.e. form, programme and spatial arrangement, notions of the civic, ornament, etc.) whilst arming the students with current best practice educational models as departure points through readings, lectures, discussions and invited presentations by our collaborators; curated to follow the week's investigative theme. Forget refinement. These early moments are combat conditions. Students are urged to move quickly; to not hesitate and to give each week's ideas a temporary trajectory to follow through. The focus is on the isolation of architectural elements in relation to the project brief, vision and wider critique of the type in question. Emphasis is on amassing an 'arsenal of ideas' that students can refer to for the rest of the semester.

Stop Doing: Two steps back, three steps forward.

Students generally produce five to seven separate propositions that tackle different areas of the research focus and building brief. Students must be given an opportunity to stop doing and to simply reflect and consider what they have discovered to generate an 'Arsenal of Ideas'. This handbook of strategies and propositions contain the outcomes of their intense experimentation of ideas that they can turn to for the rest of the semester but also for future endeavours beyond the current studio. The handbook plots out a strategic trajectory for the development of their project.

All In: The iterative design development process.
The second half of semester shifts into design development mode. Students are urged to 'return to earth' and explore how the speculative ideas that have emerged from their intense experimentation can be useful in the development of the 'project'. This is an iterative process where students refine, curate and omit ideas and outcomes. It is equally important to ensure a framework for deliverables that results in an architectural proposition with formal architectural drawings to ensure that students 'practice' transitioning from the diagram to the real. I continually emphasize the importance of translating the diagrammatic outcomes to real world constraints as it gives the students a peek to the realities of the discipline.

The Polyphonic Studio
The Learning Frontiers design studios aspired to be a polyphonous studio where students, stakeholders, researchers, property managers, practitioners, educators and academics can participate together to contribute to the project. The studio was unusual in terms of the amount of voices with varying expertise and backgrounds. The dissolution of the master/apprentice model in favour of a more integrative and multi-relational approach to pedagogy diverges the role of educator as curator and facilitator of alternatives forms of knowledge for students to be exposed to. Throughout both studios, our collaborators and partners played a crucial and active role in shaping the learning environment and its material. A series of 'learning events' were curated to enable these transmissions of expertise to include: Collaborators Talk Series, Learning Frontiers Mini-Symposium, Learning Frontiers Forum, a number of Work in Progress sessions and Final Presentations with stakeholders. With several voices presented on the studio stage and with varying types of contributions, it is crucial for the educator to filter and curate the necessary information to the students. It is important for students to roam, but more importantly to roam without getting lost. The polyphonic studio encourages public discussion, beyond the profession, of ideas in progress.

Knowledge Capture and the Book of MEAT (Models for Education Alternative Typologies)
Innovative and alternative ideas, positions, propositions and paradigms emerge in design studios. More than often, these findings dissolve post-studio with fragments of knowledge only visible in student folios. These discoveries must be captured to be useful. The Learning Frontiers design studios sought to capture the knowledge through a series of books titled, 'Book of MEAT' or Models for Education Alternative Typologies. The studio books, created by the students, aspired to document the inner workings of the studios - procedural experiments, both successes and failures,

developmental processes, ideas and propositions. Although a more edited and curated version is needed to be able to reflect on the emerging ideas and themes, the initial versions were invaluable artefacts that were made available to the stakeholders and collaborators and as well as students who participated in the studios.

Concourse for Ideas

Design studios are concourses for ideas where experimentation and speculation towards the unknown frontiers are valued. They assemble and capture multiple viewpoints, opinions, information and voices to enable the formation of innovative and alternative knowledge. The Learning Frontiers studios exhibited the value of a polyphonous learning environment where refinement is delayed, intense reflection is supported, going beyond the diagram and transforming into the real is encouraged, and capturing the knowledge is vital. Each of these attributes or 'moments' within the design studio can facilitate a 'think-tank' learning environment where the role of the educator and practitioner-academic constantly shifts to lead students to the frontiers and beyond for the pursuit of ideas.

Studio as a Design Clinic

Aleksandr Mergold, Cornell University

The school of Architecture has finally embraced the idea of user-centered design, the participation of community in the design process, and above all, learning how to engage, to listen and interpret the input from the stakeholders as fundamental to our profession. In the last decade, we have tried several approaches to how an engaged design studio may be conducted, at what level and at what locations. The studio format remains fundamental of architecture education - and the studio, too, while allowing for peer-to-peer learning, experimentation and discovery, can be an insular experience. Continuity of a project from semester to semester is also challenging (if not virtually impossible). Travel (if necessary) is costly, complicated and ultimately too short to fully understand a specific community. There are timely, budgetary and legal limits on how "engaged" students can become in construction of a project.

We have noticed, however, that engaged design studios open up the students to completely different ways of experiencing architecture and built environment, makes them more passionate about their own work as it has specific relationship to real places and people, makes them aware of their own biases and limitations, and gives them tools to overcome those. And above all, it introduces the students to the idea of ethical responsibility to the end-user - that they are not alone with their design work. We realize that now, as the profession is experiencing a major paradigm shift in how architecture is practiced, it is ever more important to teach the students of architecture how to ethically engage and learn from the stakeholders of the work they are creating.

In the last five years, a studio format that has proven productive both for our students and our partners has emerged. Conceived as a "design clinic" (similar to the "legal clinic" in the Law School), "Design Plan" (or D/P) studios work with stakeholders across

the globe to investigate and precisely define problems that can be solved with the input of designers and architects. Ranging from design of objects, buildings and cities, to strategies, organizational principles, and policies of reuse, the studios aim at enabling the local communities to make their desires and concerns positively affect their immediate constructed environment. A "design plan" is hatched from observing, empathizing and designing interactions with a given local situation, a critical alternative to top-down "master plans."

Recognizing the limitations of working on academic calendar, these studios engage in a very focused set of (local) issues where a community of stakeholders needs assistance to either formulate/research the problem or create a set of tools for further assessment or development of the problem (the tools include narratives, architectural proposals, scale models, prototypes) by others (professionals or the community itself). This way, while the duration of engagement itself may be short, the learning outcomes for our students are significant and the stakeholder partners receive a meaningful and useful products that they can use subsequently. Furthermore, the semester format allows the engagement of professional, academic or industry partners to offer their expertise and resources to the studio. (see previous studio descriptions in the addendum)

Previous Design Plan Studios/Clinics:
FA' 14   D/P 1.0 - of Fears and Desires in a small town in the Northeast Co-taught with the Dutch design collaborative Droog Design, the aim of the studio was to redesign a small village settled in the late 18th century as an entity for the 21st century. 13 projects were presented to the Mayor and Village Council.

FA'15   D/P 2.0 - of Histories and Identities in hamlet of Bzionkow, Polish Silesia A small town in western Poland with a complicated and layered history was struggling with ideas for what to do with ruins of nearby rural estate, that was once own by a family now in the US. Co-taught with faculty in Political Science from another institution in the US and Architecture faculty in Wroclaw Polytechnic Institute. Created five proposals for re-engagement of the ruins that started a larger development conversation in the municipality.

FA'16   D/P 3.0 - of Empathy and Possibilities in "Temporary" Refugee Settlements Partnered with Unistrut, a metal construction system company, to create prototypes for temporary urban amenities in various refugee settlements. In consultation with the Museum of Modern Art that ran a major exhibition on the subject.

SP'18   D/P 4.0 - of P/Fast & Future Building in a small town in the Northeast In partnership with an architecture firm that specializes in up-cycling of industrial waste, and a technology company that specializes in temporary inflatable and self-powered structures, the studio investigated the possibilities of engagement with the existing structure of the Emerson Chain Factory on South Hill, currently mired in an impasse over its future development due to massive contamination and insurmountable cleanup task associated with it.

SP'19 D/P 5.0 - of Industry after the Fall, in Yerevan Armenia Begging next week, this is a partnership with a Department of Near Eastern Studies and NUACA (National University of Architecture And Construction Of Armenia), to consider the remnants of the Soviet industrial building complexes in Yerevan that are too numerous, too ruined and too vast to be re-utilized.

Proposed paper and presentation considers the implications of engagement with the "real world" though the Design Clinic model, and contemplates the possibilities of the evolution and re-centering of the design studios while still keeping the experience fundamental to the education of an architect.

Criticality, Courage, and Curiosity: The Education of the Civic Practitioner
Benjamin Peterson, Boston Architectural College

The conventional plan of a Dunkin' Donuts[1] reveals nuanced descriptions of social relationships to eyes that choose to examine it critically. Fieldstone foundation walls[2] broadcast their legacies of flooding and fortitude to hands that have the courage to encounter them. The city tells stories, through its people and places, to those curious enough to listen.

When a design student engages with the world, critically, courageously, and bolstered by a compassionate curiosity, a design education may transcend its ability to produce the civically engaged designer and move further towards the celebration and cultivation of the designer as citizen.

This paper examines the pedagogies of applied learning in practice, in design education committed to social justice and equity, and driven by a mission of expanded access to the design professions to those historically excluded from its canons. When curricular agendas privilege the integrated and interdisciplinary development of both professional and intuitive skills, emerging designers may be equipped to become not only meta-cognitive problem-solvers or reflexive practitioners[3], but also more engaged and delighted participants in the processes that transform the places in which we live, work, and play.

An overview of a curricular sequence in Practice will foreground two specific case studies that situate design students as translators, facilitators, mediators, and collaborators in world making through the spatial and material tools developed in design education.

Practice: Beyond Reflection
The College[4] distinguishes itself as being the only institution of spatial design with a curriculum that integrates both academic and experiential learning concurrently. The concurrent model, unlike internship or co-op programs, fosters student growth and development both inside and outside of the classroom simultaneously, and daily. During their tenure at the College, students are hired and compensated by design firms

and organizations, working in a variety of professional settings in architecture, landscape architecture, interior architecture, or related fields. As concurrent students, individuals acquire and develop necessary skills not only to design professionally, but also to practice design professionally. The synthesis of applied and academic learning fosters a robust dialogue between the classroom and the office, between the community of learners at the College and the community of professional designers at large.

The experience in Practice encourages the growth of a reflective practitioner; a student takes ownership of his or her professional development and is responsible for understanding and articulating the trajectory of his or her learning. Twice annually, students report their progress, indicating the number of hours they have worked in firms or on related design projects. Moreover, students attend periodic, face-to-face Practice Assessments. In conversations with Practice Faculty, (professional designers affiliated with each of the design disciplines) students present evidence that validates their experiences (Practice Hours), strategize about their continued professional development, and have the level of their professional skills (Skill Level) evaluated. The accrual of Practice Hours and Skill Level provides a benchmark of progress and forms the basis for a component of each program's graduation requirements. In addition to a degree, students who graduate from the College have a substantive, vetted set of design experiences and skills. At the time of commencement, nearly 90% of the College's graduates are gainfully employed in design offices regionally and beyond.

A Curriculum of Applied Learning
As students move towards a total immersion in concurrent learning, they must first satisfy a curricular sequence in Practice that scaffolds professional and personal development through applied learning in field-work and project-based settings. Aligned with the development of design skills and tools acquired in studio and technology courses, a sequence of Practice Department initiatives serves as an outlet for students to test, develop, and reflect upon skills in real-time, double-loop learning feedbacks. Practice curricula is intentionally interdisciplinary, recognizing that an active and participatory engagement with the world requires multiple disciplinary frameworks. Students in the schools of Architecture, Landscape Architecture, Interior Architecture, and Design Students enroll in a sequence of Foundation courses: CityLab, Community Practice, and Gateway.

CityLab, a four-day intensive experience, begins on the first day of enrollment at the College. CityLab utilizes the city as a laboratory for learning through exploration. Students begin to contextualize not only the place of their learning, but also the complex problems and opportunities presented to designers in the continual making and remaking of the city.

Community Practice serves as an introduction to contemporary and emergent design practice by investigating the expanded role of design in the public realm, the agency of designers working with(in) communities, and the utility of design-thinking as a tool for social change. Building on the contextual underpinnings of the CityLab experience, Community Practice examines notions of communication, collaboration and community:

How do designers communicate complex information to each other and to other, broader audiences?   In creative processes, how do various voices contribute to the identification and pursuit of shared, mutually defined goals? When conflict arises, how might it be resolved? Students actively engage members of multiple communities in the identification of a design problem as a project, the speculation of its resolution through analysis and iteration, and by developing and constructing a project in response. Students address the multiple meanings of "community" and articulate attitudes about the role of the designer, design thinking, and design processes at the interface of social equity and the public realm.

Stories from Practice: Gateway
As the economy slowed in 2008, students at the College, like many in the design professions, found employment difficult, if not impossible. Others felt the impact of recession- non-profits lacked the capital and energy to realize projects as donations and contributions waned. Recognizing an opportunity to synthesize these mutual needs, the Practice Department paired its first group of students with non-profits in need of design help and the Gateway Initiative was born.

Since the earliest projects, Gateway has proven to be an effective platform for students to gain experience in project planning and delivery, design, collaboration, and skill building in partnership with community groups, municipal agencies, and non-profit organizations. In alignment with a pedagogy of applied learning, students are expected to become active participates in their own educational experience. Students advocate for skills they would like to learn, reflect on their own progress, successes, and challenges, and have the opportunity to share their work with peers at several key junctures in a semester's long project. Moreover, a team of dedicated faculty, design professionals from many different disciplines, play a significant role as advisors, mentors, and facilitators for student learning and collaboration.

Gateway Projects, a transition between Foundation and immersion in concurrent learning, present students with the opportunity to test the experiences of the Foundation year through real- projects with real community partners. Gateway projects are real, and the design problems challenging. Through direct engagement with community members as both clients and partners, students understand the responsibilities and the rewards embedded in the design process. Successful Gateway projects not only satisfy the needs outlined by a particular client, but also often exceed these expectations- presenting complex information through new lenses, uncovering further opportunities for design, and advocating for the role of designers and design thinking in the resolution of messy problems.

Case Studies (to be included):
Gateway- Designing for Dignity with MASS Design Group, and Breaktime
Gateway- Advancing Resiliency with Boston Society of Landscape Architects, the Community Design Resource Center, and the Sustainable Solutions Laboratory and UMASS Boston[5]

Conclusion
The curriculum of applied learning in Practice exposes channels through which design learning may applied, tested, and reflected upon within larger, multi-disciplinary, social frameworks.   As students develop skills and competencies over time, the content of their studies emerge as self-directed, simultaneously inquisitive and responsive, and situated (at times peripherally) within dialogues beyond the conventional or classic disciplinary boundaries of architectural education.

While the path towards and through concurrent learning may be circuitous, students navigate a variety of experiences in practice, accruing skills through the application of knowledge. By reframing the false dichotomies between learning 'in practice' and learning 'in studio', we reveal opportunities for architectural education to become more reflective and for students to take ownership of their own learning trajectories.   Design education, when understood as occurring in multiple sites through multiple modalities, generates ongoing and reciprocal dialogues between academic learning and professional design practice.

[1] Breaktime Coffee Gateway Partnership.   Co-taught by College faculty and faculty from Philosophy and Critical Theory
[2] Advancing Resiliency Gateway Partnership. Collaborative initiative with students and faculty from the College and undergraduate students in marine science, ecology, and engineering.
[3 Metacognition refers to processes of learning that encourage students to think reflectively, and critically, about not only what they are learning, but also how they are learning. The double-loop learning theory, developed by Christopher Argyris and Donald Schön (1974), uses such critical thinking to evaluate the construction of new knowledges through their application in practice and aims to make decision-making processes more effective through the recognition of productive failures and successes.
[4] In an effort to comply with the requirements of the blind review, "the College" refers to the institution described within.
[5] Full paper will discuss the outcomes and experiences of multi-disciplinary, community-based projects.

Educational Philosophy about the HUNCH III

Friday, March 29, 2019
14:30-16:00

Animating Mediums: from Visuality of Superimposition to Drawings for Afterimage
      Catty Dan Zhang, University of North Carolina at Charlotte

In her book Phantasmagoria, Marina Warner states a relationship between vision and mentality that "one kind of mental image was described as 'eidetic', referring to optical experiences that are retained in the mind's eye with hallucinatory intensity. It comes from eidos, used by Aristotle for that which is seen, or 'form, shape, figure', both of something particular and of a generic kind of form, and it is related to idein, to see, and eidolon, a shape, image, spectre, or phantom, also an image in mind, a vision or fancy"(Warner, 2006). It was within a relatively short period of time- comparing with over a century long obsession of the aesthetics of superimposed moving sequences- that the discourse of animation in architecture has diverged its paradigm from analytical motion forms in the digital environment towards new possible optical experiences and atmospheric effects in physical spaces. Differing from the traditional cinematic model implemented in architectural design which stitches series of views through spatial organizations, recent investigations regarding these dynamic spatial effects have been largely inspired by mapping techniques, autonomous drawings, and hybrid mediums; or in other words- expanded operations on visuals.

The long tradition of the spatiotemporal visual practice in forms of superimposed images, however, has taken on various trajectories transitioning from the static basis, to animated implications. Historically as ways of capturing and representing motion, it is recognized identically as sets of frames with discrete positions, where the optical motion emerges from subconscious animating process of the viewer.   With the emergence of digital technology in architecture, Greg Lynn discussed in his book *Animate Form* two decades ago the analogy between Etienne-jules Marey's mechanical interpretation of his chronophotography study, and the numerical model of trajectory, velocity, points and curves as virtual forces for animating forms in the digital software. Captured on one negative during swift movements, Marey utilized various instruments and techniques for extracting continuous curvilinear flow forms of movements from the segmented frames. The act of geometric calculation laid a foundation for computational drawing and modeling, translating parameters into vector based virtual components that allow infinite extractions and transformative manipulations.

Animating Mediums draws methodological inspiration from such precedents but attempts at an anti-continue effect from the superimposition, foregrounding concepts of images that are not seen only as design outcomes, but also as apparatuses that mediate vision. This inevitably refers to a parallel investigation with the same visual type of documented movements which not primarily looks at form but instead, sensation. Represented by Futurist, this trend tackles illusory movements intensified by color,

stroke, and pigments, for achieving a "plastic analogy of dynamism", a term coined by Gino Severini in the 1914. The subjective expression embedded in the artworks defies relationship of form and field defined by any mathematical equation. It appears as discrete, fragmented, yet somehow integrated based on visual and psychological tectonics rather than principles of physics and geometry; a proto-digital operation on what has been widely explored now- the raster image and the pixel. *Animating Mediums* investigates "the pixel" and "the animation" in two interrelated approaches. One explores the idea of "architectural pixel" as a spatial logic, while the other looks at the numerical model of pixels and the design of interactive environments using customized digital and physical tools. Both are done in forms of intensifying duplication and fragmentation- actions referring to Warner's argument on hallucinatory optical experience, as well as to Severini's statement on the plastic analogy in art forms.   The Architectural Pixel Traveling at sunset on a bus ride to Marseilles from Paris, artist Brion Gysin closed his eyes as the bus entered a long enfilade of evenly spaced trees. The resultant flickering, he later wrote, swept him out of time into "a transcendental storm of color visions." The eidetic effect of experiencing the flashing of sunlight- made possible through the fleeting imagery animated by one moving along the passage at a certain speed- led to a mechanical reproduction by Gysin as the "Dreamachine". The device reassembles the condition and scenario at an infrastructural scale into a mechanism that stitches optical illusion and mentality. The spatial organization of the trees along the motorway, the speed of movements, and the direction of light rays, were transformed into the spinning apparatus. A cylinder with slits cut in the sides and a light bulb suspended in the center, is placed on a record turntable. The rotation speed allows the light to come out from the holes at a constant frequency of between 8 and 13 pulses per second, corresponding to "alpha waves", the electrical oscillations normally present in the human brain while relaxing (Century, 2000).

It is from this narrative that I would like to propose a concept of architectural pixels. In his foreword essay for *Public Intimacy*, Anthony Vidler wrote, "three-dimensional space, inhabited and set in virtual motion by the body, has formed the material of modern architecture". Neither simply as narratives formulated from sequential frames nor imagery of patterns, architectural pixels could be understood as results of physical assemblies reacting to such virtual motion, so that temporal material of sliced time is converted into perceptible fragmented effects.

Imagine a set of promenades assorting movements of vehicles and pedestrians, for instance, is integrated with geometric modules that capture and retain reflections of light from automobiles moving at various speeds. In a speculative highway rest stop project to be further elaborated in the final paper, this spatial logic of pixels resulted in an assemblage of light collected and diffused from moving cars; a montage of actual and delayed moments stretching along the highway; a real-time light polyphony to be experienced in motion. Programmed Vision Benefited from the architectural speculation, *Speed Tectonics*, experimental installations developed in a seminar taught by the author, extends possibilities of mediated perception by hybridizing numerical pixels and physical mediums. Tracing analogies between the visuality of superimposition in paintings and the computational constructs of images, Speed

Tectonics seeks methodological translation from Severini's concept on plastic analogies of motion, to the eidetic perception in spatial settings with human motion as inputs utilizing technology. Emerging from visual methods indebted to Marey's chronophotography, the artistic techniques of tracing moving objects practiced by groups such as Futurist allows "tangible figures of physical motion" to dissolve "into abstracted and non-referential forms" (Mather, 2016). This type of abstraction- directly built upon physical phenomena- intends to render perceptual experiences of motion in a plastic manner. While still appear as series of frames extracted from continuous motion, these artworks usually employ methods such as blurring fore-, middle-, and background of each frame; interlocking picture planes; as well as utilizing colored pigments. Such techniques trick human eyes which result in constant zooming and re-focusing manners, so that other sensory, as well as somatosensory are triggered by both analogy and physiology. The use of time-based media, on the other hand, allows the act of intensifying fragmented visual imagery to expand the physiological stimuli beyond the two-dimensional static visual format. Among pioneers in computer-animated films as such, Pixillation (1970), ENIGMA (1972), and Googoplex (1972) by Lillian F. Schwartz employing early customized computer platforms, are created with a generative process which uses an initial image and a process by which it could be transformed. These films encompass rapidly alternating abstract patterns and flicking blocks of colors which are highly dependent on saccadic motion of eyes. The resulting visual appears as a motion in space that generates a hallucinatory depth (Patterson, 2015).

Speed Tectonics employs computational processes of such visual operations both spatially and temporally. The cases to be elaborated in this paper each focuses on a particular aspect of motion related perception in order to unveil the linkage between the visuality of a static image and the afterimage generated by dynamic experiences. Students customize digital tools based on image processing algorithms, which are then outputted as articulated physical conditions. Vertoscopes, for example, explores color thresholding in the digital environment and depth distortion in the physical context. It algorithmically plays with spatial reference in motion by taking movement and speed, stretching it, to create an illusion of immobility in real time within a long atrium. Other examples including image transformation and constructed geometric reflection within an "infinite room"; computational stroke and duplicated array through a thickened fog screen, an so on. Conclusion Marey's optical apparatuses captured "the imperceptible, the fleeting, the tumultuous and the flashing of body movement in the non digital age" (Salter, 2010). Today, with the advanced computing technology and display systems, both the spatial and temporal data of swift movements could be fathomed with high accuracy and fine details. Nevertheless, the experiential aspects still have great challenges being either quantitatively measured or qualitatively described. Experiments in Animating Mediums take pixels and raster images as spatial logic as well as design agencies, and investigates how swift movement mediates vision from a human-centric perspective. Such methods allow visuality of superimposition being transformed into design concepts which could be adapted to alternative contexts, instruments, and technologies that are available, as well as a range of physical spaces and materials.

From Representation to Infrastructure: Explorative Media as Pedagogical Devices - The Case for Design Advocacy through Drawing

Carla Aramouny, American University of Beirut

When teaching design and architecture in oscillation between practice and academia, we are inescapably bound by questions of context; our environment reflects greatly on us and our perception, and forms the basis of our design approach and rhetoric. In teaching, we attempt to engage students in reflecting on, observing and rethinking their contexts. We push them to reflect on new potentials, to re-imagine what is usually widely established. We allow them to create opportunities for new perspectives, and to ponder upon the potential of "other" possibilities that may exist. In Lebanon, a country with endless problems and infrastructural deterioration, such questioning is unavoidable and becomes crucial to pursue at an academic level, where reality and practice fail to proceed. The academic endeavor takes on the role of the provocateur, the advocator for change, projecting forward with a new imaginary.

On the other hand, drawing, architecture's most powerful medium, has resurged today as an essential thinking tool, able to convey ideas and suggest aspirations. Its role has progressed beyond the limits of representation, becoming fundamental for reflection, conceptualization and advocacy. Its power lies in its recurrent ability to convey meaning visually, which is universally understood.

My teaching trajectories try to bring these two together: Drawing and reimagining context. This is especially distilled in a seminar course I teach, that builds upon the potential of architecture representation with speculation on local infrastructural systems, presented through the medium of a pamphlet.

Drawing resurgence
In the design discipline today, a resurgence of drawing through experimental representation and complex projections is taking shape, bringing drawing back as a necessary reflective and conceptual device. Drawing, an essential architecture medium, is being reconsidered today as architecture's fundamental output, recognized not only as a representation tool with a descriptive aim but more essentially as an experimental design tool that conveys thought, process, desires, and sensibility. In his essay Diagrams of Diagrams[1], Anthony Vidler, in reference to Robin Evans, describes the architecture drawing as the only output during the design process that is directly touched by the architect's hand. The latter according to Vidler defines it as the architect's "peculiar disadvantage" where in they are only able to work directly with an intervening medium, or the drawing, to produce their ideas. However, this disadvantage has elevated the role of drawing where it has gained the capacity and power to move beyond architecture's practical bounds and to reflect in a cumulative manner the complexity of the thought process. Recent trajectories in architecture discourse and research bear a witness to that with work of architects like Neil Spiller, Work AC, among others.

Drawing as advocacy / the pamphlet (a revival)

In addition to its ability to encompass meaning and thought, drawing has long gained a role for design advocacy, for taking positions, and proclaiming visionary manifestos. It has been used as a tool for imagining new possibilities and for expressing them in a manner that provides larger outreach. In this current connected digital world, visualization and the "image", their abundance and power of transmittance, have re-enabled the visual to convey meaning and to provoke. Within the architecture milieu specifically, the conceptual drawing is retaking that role, standing in clear opposition to the rendered image or photograph. It is again playing the role of instigator, provoking through complex projections and collages new imaginary possibilities. Work of architects like Design Earth and Lateral Office, among others, build on that and utilize drawing as a geo-political tool for speculation.

In advocacy through drawing, a well-known print medium, the pamphlet, has long been used and recognized as an effective tool for the dissemination of ideas. Described generally as a concise and relatively small zine, the pamphlet has been effectively used as a literary tool for printed propaganda since the beginning of print. In architecture specifically, it has been used to communicate and proclaim ideas, in many cases inventive and radical, in an informative and visual manner. One of such examples is in the celebrated work of the British collective, Archigram. The group's founding method for disseminating their ideas was in producing a visual pamphlet, using the term Archigram as a combination between architecture and telegram[2], to serve as the platform for presenting their visionary projects and radical ideas. Similarly, in the late 70s, Steven Holl and William Stout established the renowned Pamphlet Architecture to serve as an explorative publication for design research and speculation[3]. More recent productions of architecture pamphlets include the work of David Garcia and his MAP publication (Manual for Architecture Possibilities), initiated at the Architecture Association in London as a theme-based folded pamphlet, focusing on different critical themes per issue and displaying a combination of research work and explorative design.

A new infrastructural imaginary
For more than a decade now, Lebanon's infrastructure has been in rapid decline, as political stagnation and corruption are hindering any substantial development. Different infrastructural systems, such as transportation and road networks, and water and waste systems, have all been deteriorating to unprecedented levels, leading to severe repercussions, from paralyzing traffic congestions to extensive air and water pollution affecting general public health. For that, a need to rethink Lebanon's infrastructure has become crucial particularly in academic environments, which facilitate the emergence of "other" ideas and allow for unconventional possibilities. Provocation through design and speculation on alternatives emerge thus as fundamental and necessary pedagogical endeavors. With that in mind, the seminar course I teach was conceived to rethink local infrastructural systems through explorative drawing, advocating for change by design. The course output conveys research, mappings, and new imagined proposals, developed by the students within a folded distributable pamphlet, in both digital and printed versions. Over the course of two years, the class dealt with different local problematics, focusing mainly on the issues of transportation and pollution. Sometimes imaginary, other times more tangible, the work produced expands the possibilities of the

architecture drawing and proposes new infrastructural visions, from driving aggression shading devices, conveyor belt road commerce, to floating water-filtering parks.

This paper presentation thus will present in further detail the methodology, research, and drawings developed in the course. It will reflect on today's renewed role for drawing as an essential conceptual tool and a necessary medium for design advocacy. It will discuss the need for academic pedagogies that allow for contextual research and speculation and that help to incite change through design.

1- *Diagrams of Diagrams: Architectural Abstraction and Modern Representation*, Anthony Vidler, Representations No. 72, Autumn 2000, pp. 1-20
2- *Archigram*, Peter Cook, Princeton Architecture Press 1999
3- *Inside Pamphlet*, Amelia Taylor-Hochberg, Archinect 2016 https://archinect.com/features/article/147814975/inside-pamphlet-how-one-of-the-most-enduring-experimental-architecture-publications-got-its-start

Productive Anachronism: In pursuit of architectural novelty through historical forms of representation

Elizabeth Keslacy, Miami University

To translate is to convey. It is to move something without altering it. Yet the substratum across which the sense of words is translated from language to language does not ap-pear to have the requisite evenness and continuity; things can get bent, broken or lost on the way. I would like to sug-gest that something similar occurs in architecture between the drawing and the building. A curious situation has come to pass in which, while on the one hand the drawing might be vastly overvalued, on the other the properties of draw-ing—its peculiar powers in relation to its putative subject, the building—are hardly recognized at all. Recognition of the drawing's power as a medium turns out, unexpected-ly, to be recognition of the drawing's distinctness from and unlikeness to the thing that is represented, rather than its likeness to it, which is neither as paradoxical nor as disso-ciative as it may seem.

 -Robin Evans, "Translations from Drawing to Building" (1986)

The materials and techniques that we use to create architectural representations undoubtedly affect how we apprehend the work of architecture being depicted. If we consider Leonardo da Vinci's oil-on-poplar depiction of Lisa Gherardini next to a pencil sketch, a comic-book style half-tone, and a graffiti-based interpretation of La Joconde, it's clear that each medium maintains its own set of associations, biases, and moods of apprehension while, at the same time, clearly communicates its content and reference.

It is also true that particular modes of drawing can profoundly shape the designed object itself during the design process. Any student of architecture can articulate the implications of choosing Rhino, Sketch-Up, Maya, AutoCad, or Revit to work through an architectural design problem, particularly in terms of the forms and details each software easily facilitates or accommodates with difficulty. Robin Evans' insights about drawing's

fundamental difference from its content, and yet the agency it maintains in the shaping of that content, turns out to be just as true in the digital age as it was in the era of hand drawing.

Unfortunately, the professional trend toward hyperreal image-making has meant concealing the drawing's own construction process-es and neutering its space-generating potential. The speculative and uncertain nature of hand-production is sublimated in favor of the glossy render that makes the proposed appear as already-real. The pendulum is already swinging away from this tendency in some academic and professional circles, largely under the banner of the post-digital. Despite a return to orthography, collage, and an "illustrated" rather than "rendered" visual sensibility, the vast majority of that work remains stubbornly digital. How, in a world saturated with Instagram-worthy architectural images, can we teach our students to reinvest in a drawing-based design process that is experimental and open-ended? How can drawing be reinvigorated both in terms of its representational agency and its abilities to produce new kinds of form and space?

My Spring 2019 upper-level undergraduate design studio at Miami University in Oxford, OH is pursuing answers to these questions through a methodical course of design research into a traditionally feminine, historical craft that has recently become new again: paper quilling. Paper quillwork, or paper filigree as it is also known, is a medium of representation dating back to the 13th century and one that took on particular importance in the United States by the 18th- and 19th-centuries, alongside the more widely practiced art of embroidery. Strips of colored or gilded paper were wound in coils and pressed by hand into various organic shapes. These were then assembled into a variety of representational arrangements: pictorial scenes of country life featuring architectural façades, floral bouquets, heraldry with animal forms, and devotional objects with abstract patterns. (Figs. 1 & 2)

More recently, there has been a resurgence of interest in paper quilling at a range of levels, including fine artists, commercial graphic designers, and amateur hobbyists. This, in turn, has led to an expansion of quilling techniques that move beyond flat, coil-based practices to include three-dimensional thick shapes, a new graphic emphasis on outline, and impressionistic forms that treat paper like paint. (Figs. 3, 4, 5) Consequently, there has been a proliferation of new tools and materials that make paper quilling one of the most economically and physically accessible crafts today.   As an instructor designing a new upper-level undergraduate studio, I bet on a hunch that paper quilling could offer a great deal to architectural design and representation. I did so based on three observations. First, paper quilling refashions paper from a passive recipient of pencil or ink into the very medium of drawing itself. Secondly, it introduces real thickness into drawing genres, such as the plan and elevation, that have long-established conventions for implying or representing depth. Finally, it reintroduces the hand to architectural design and, as a corollary, a large measure of open-endedness to the process of design. Each of these suggests a point of departure from the conventional sequence of activities in the design studio, and maps on to a series of exercises designed to develop students' quilling skills, expose the biases of quilling as a

representational medium, and explore how quilling techniques could be employed in an experimental, open-ended design process. The studio culminates in the design of a "Museum of Minor Arts," presenting an opportunity to instrumentalize the techniques developed in preceding experimental exercises in the service of an architectural design project. Furthermore, the project's program serves as a venue to think about the cultural value of design, craft, folk art, the decorative arts and architecture through the design of spaces for their collection and exhibition.

This paper situates the studio's "hunch" at the nexus of research into the history of paper quilling and a critique of contemporary representational practices.

Visual Culture, Disciplinary Engagement and Drawing: Pedagogical Possibilities for an Indian way of Architectural Thinking
Sourav Banerjea, Ansal University

"*The high technical polish which is the hallmark of the standard Hollywood product, would be impossible to achieve under existing Indian conditions. What the Indian cinema needs today is not more gloss, but more imagination, more integrity, and a more intelligent appreciation of the limitations of the medium. What our cinema needs above everything else is a style, an idiom, a sort of iconography of cinema, which would be uniquely and recognisably Indian.*" Satyajit Ray in 'What is wrong with Indian Films?'

Introduction
Architectural thinking and design process have always been dependent upon the representational medium and language of architecture - conventional drawings, diagramming, models, and iconography, to name a few. As a result of technological advancement (therefore possibilities) and socio-economic change, representation techniques have evolved, from conventional processes to 'augmented reality'. The forces of capitalism, globalization, consumer culture, celebrity and media culture, visual culture, technocracy have been instrumental in creating reality-based representational systems - reluctant to engage with the discipline of architecture. With access to augmented reality, the client no longer has to engage with the traditional plans, section and elevations, nor look into printed photomontage or virtual walkthroughs. Software acts as the agent of consumption, and this consumptive culture subsides it is only in the architectural process (thinking & delving), that, notwithstanding the fact that, for many architects and students, software and technology are steadily and consciously becoming 'ends' rather than 'means' in the design process. If 'meaning' is critical to architectural thinking and production, then how much is the design conception process pertinent? What are the possible methods in the realm of architecture that will create a 'culture of thinking'? If drawing is to be at all endorsed as that method, or at least the means, then one needs to understand how it falls prey to the superficial visual culture and gradually escapes the discipline of architecture and aligns itself with consumer capitalism?

This paper places this issue within the larger heterogeneous culture comprising technological, social, economic aspects and aims to unravel the conceptual underpinnings of the existing architectural thinking, representational culture in India. It examines 'drawing' as a convincing and disciplinary medium of representation and steers towards a 'representational maxim' between technology and value, discipline and consumption, tradition and modernity in the context of architectural thinking process in India.

Episode 1: Post-Modern Society, Architectural Thinking and Representation
The erosion of older distinctions between high culture and popular culture is another significant shift in the postmodern understanding of knowledge and disciplines, as put forth by Fredric Jameson. The concept of representation, language and culture in the scholarly work of Stuart Hall[1] is substantially applicable within the production of drawings and the drawing culture, in the realm of architectural thinking and discourse. Architectural Thinking and Representation The procedures on architectural design, appears to have shifted from drawing to the diagram, over the second half of the twentieth century (Somol, 2007)[2]. Within this context, it is reasonable to say that diagrams are no longer pure geometry or structure, but an embodiment of all the meanings that underline its essence. In the Indian context, any discussion on globalization and architecture needs to take into account the immense heterogeneity of the country. Charles Correa[3] intelligibly explains architecture as an amalgamation of four distinct attributes - climate, aspirations, culture & technology and how these four diverse parameters give meaning and purpose to architecture and architectural thinking. This paper, in agreement to Correa's proposition, attempts to understand the various parameters that impact architectural thinking and its representation, and how do these interact with and within each other.

Episode 2: Technocratic Culture and Value Centric Culture Technology Centric Process
Consider a case of technocratic thinking where technological dominance overpowers architectural thinking and production.[4]. There is a marked shift from the traditional, syncretic understanding of climate-cultural-societal systems and therefore, the absence of an architectural thinking and response that would have explored this territory as a virtue of art and design. Gradually, technology seeps into the fabric of 'culture'; ceasing to be discernible as a 'deviation', as an 'invasion' - manifesting itself in the fourth component of our architectural premise - 'aspirations'.

Value Centric Process
Consider another case in which technology becomes a 'means', a part of the process, a quintessential function of the 'doing' and 'realising', and not the 'end' of the process. Is the manifestation of architecture to be considered as a tangible idea (displayed by technological supremacy of structures, materials, systems etc.) or as a more qualitative thread, an intangible aspect?

Episode 3: Visual Culture and Disciplinary Culture Drawing, Representation and Disciplinary culture

In Architecture, drawings embody time as a continuum. The photorealistic digital rendering of the contemporary architectural culture has reduced representation to a question of instantaneous perception. The still shots of architectural renderings have reduced architecture to skin-deep design lacking knowledge of construction (Goffi and Lepage, 2013)[5].   Frank Lloyd Wright[6] unfolded the drawing process in 'The Logic of the Plan'- "A good plan is the beginning and the end...There is more beauty in a fine ground plan than in almost any of its ultimate consequences". In this sense, the drawing process evolves into a diagrammatic method that gets consolidated in the search for an exemplary design process. (Moneo, 2008)[7].

Visual Culture, Sexiness & Consumer Culture
The 'notion' of sexiness, as also the 'fancy' of it, is quite symbolic of our visual consumer culture and is an exemplar of all the facets of our intellectual and aesthetic existence in the contemporary 'liquefied' postmodern society. The question of 'how does it look' overshadows the quest of 'what does it mean'. The discipline of architecture gets invaded heavily by consumer capitalism, resulting in an incessant cycle of 'mindless consumption' gets created in place of a 'culture of questioning'. The spirit of drawing, in all its capacity, can address the gap between the discipline and the market, between significance and relevance, between radical experimentation and conventional reproduction.

Episode 4: Architectural Situation and Sequential Pace Appreciation, Pace & Slowness
The challenge of architecture today is to focus on architecture itself — drawings, models, architectural texts and buildings — as its locus of knowledge and, specifically, on how that knowledge can become a tool of the design thinking process (Theory by Design Conference at Antwerp in 2012). The quest for 'meaning' becomes the visible, or at times the obscure goal of the disciplinary culture. What happens when 'meaning' is replaced by 'purpose', which is then overlapped with 'role/function'? Pace and slowness become key drivers which draw a fine line between 'experiential movement across the whole' and 'disciplinary engagement with the part'. In this effect, Drawing as a representational medium, upholds the emphasis on meaning and understanding of 'part appreciation'.

Conclusion: Prospects and Possibilities of 'Drawing' as Representation Architectural Education, India & the West
What can the West learn from India? For one, how to deal with deprivation and scarcity. For another, some of the finest cultural resources exist in India and the Third World as living traditions. (Menon, 2000). Learning through apprenticeship and through the modern institution of school are two very different propositions and the difference is often not understood. Drawing as an 'Expression', against 'Communication' The popular understanding of drawing as a language, or just as a means of communication needs to be questioned. The act of drawing and its finer peculiarities need to be determined and get sensitised with; consider drawing as an 'expression'. Architectural thinking, through the process of drawing needs to find a voice, an expressive lexicon to arrive at a meaning as well as to find a larger artistic and functional purpose in the Indian society. A lot of questions and concerns surrounding drawing as a

representational means will need to be addressed. If drawing is to be endorsed, then how to respond to the consumerist idea embedded in the visual culture? How does this embedded consumerism accentuate and augment the disciplinary obliviousness? How does it gradually escape the 'sphere of architecture'? On the other hand, what are the threats/concerns which make drawing an inward looking phenomenon, and how should it be dealt with? Is there a third way, an Indian Way of Architectural Thinking through drawing?

[1] Hall, S., 1997. The Work of representation. In: *Representation: Cultural representation and signifying practices*. Milton Keynes : SAGE Publications , pp. 13-75.
[2] Somol, R. E., 2007. *Dummy Text, or The Diagrammatic Basis*. [Online]
[3] Correa, C., 2010. *A Place in the Shade: The New Landscape & Other Essays*. New Delhi: Penguin Books, India.
[4] Pathak, A., 1998. Culture as an arena of struggle: Debates around tradition, modernity and revival. In: *Indian Modernity: Contradictions, Paradoxes and Possibilities.* New Delhi: Gyan Publishing House, pp. 157-191.
[5] Lepage, F. G. a. D., Goffi, F. & Lepage, D., 2013. *Drawing thinking: a lost currency?*. Nottingham Trent University, UK, AAE CONFERENCE, SAGE Journals.
[6] Wright, F. L., 1928. In the Cause of Architecture, I: The Logic of the Plan. *The Architectural Record*, pp. 49-57.
[7] Moneo, R., 2004. *Theoretical anxiety and design strategies in the work of eight contemporary architects*. Cambridge Mass.: MIT press.

Incubating HUNCHES about Pressing Issues into Academia III

Friday, March 29, 2019
14:30-16:00

Double (Hunch) Negative: Blending Practice/Research/Teaching and the Critical Imagination

Eric Strain, University of Nevada, Las Vegas
José Gámez, University of North Carolina at Charlotte

In 1969, a young former abstract expressionist decided he was done with painting, went out to the middle of nowhere, set off explosives that displaced 244,000 tons of rocks, and made two 30&[mult]50-foot trenches that contained nothing.....
Merridawn Duckler, 2016[i]

Double Negative creates a feeling of tension in between its walls. Its "void" is immeasurable in importance. You "feel" the void, sense in detail the change of texture in the walls. The void within the landscape has become the "program" of experiential space.

Author 1, 2019[ii]

In response to the call for papers that focus "on the hunch that drives the practice teacher/ researcher," we propose a mutually reinforcing dialog between the making of both ideas and art and buildings and landscapes. As academics, both with a foot in practice, we see the relevance of design practice and the practice of design education as inter-related activities. Through our collaborative efforts, we work to make the space of inquiry a continuous field that reaches across conventional divisions of academy and practice. Within this field, research grounds "the hunch" while "the hunch" tempers the formality of research.

Our hunch is this: that a case study of a recent design charette will illustrate how we see: expertise developed in inquisitive professional design practice can be incorporated into the academic environment; the studio (both academic and professional) as a thinker-space that should not follow a commercial agenda nor should it become a space absent of craft and speculation, urge and fascination, skill and imagination, criticality and creativity, individual formation and social consciousness.[iii]

While our pedagogical approaches draw from a variety of disciplines, we ground our work, and that of our students, within the discipline of architecture. In this sense, we bring an interdisciplinary approach to specifically architectural issues. This is not to say that we do not question the limits of the discipline; rather, we aim to test the limits of established architectural models from within the discipline in an effort to critique, re-build, and extend those very same models.

Given this framework, we seek to instill in students a desire to question and explore ideas, issues, and technologies such that a rigorous process of thinking and acting through design becomes attainable. We are not academics or practitioners given to simplistic formalism or nostalgic ideation. We do not believe that divine inspiration serves most students well. Nor do we believe in the essential qualities of a given thing, place, or time. Each of these ideological frameworks has currency in our era but neither offers much fertile ground for rigorous intellectual inquiry.

The divinely inspired and the model of the creative "genius" each rely too heavily upon unchallenged personal idiosyncrasies, while the quest for essential entities has long been a discredited charge—we live in a world of far too many compelling systems of value, meaning, and production to claim universal agreement on such issues. Similarly, we do not rely upon conventional notions of architecture-as-service; all too often, professional worlds fail to exhibit wisdom in any convincing fashion and, therefore, fail to provide a promising vehicle of intellectual exploration. Rather than revert to techniques of inquiry that we see as limited, we encourage students to approach their design process by reformulating it as a process of investigation—i.e. as a research.[iv] It is through the careful and close study of the contexts within which architecture exists (both as a discipline and as a practice) that potential sources of inspiration to fuel a design process may emerge.

Put simply, research can spark a hunch and vice versa.[v]

A hunch, a gut feeling—both can be useful when grounded in concrete experience and information. And, immersion within a field of information often spawns unique points of departure for a design process that may provide a critique and challenge, resonance and an extension, or a scatological reference to a (seemingly) unrelated position. In the case of our recent charette for the Global Community Alternative High School, our hunch built upon the client's desires to break down institutional barriers, both physical and perceived. In this sense, the school's building must be non-institutional, break from the imagery of "governmental facilities" and instead provide a welcoming destination that nurtures through an integration with nature.

Our interpretation of these desires was to imagine how voids in a building could become something much deeper—like Double Negative. Voids, in this sense, became the vehicle of our hunch allowing us to bring the indoors in and the indoors out. This approach also integrates technology with the students' multi-cultural strengths to create a collaborative set of non-traditional learning environments including exterior spaces, visual interconnectedness, and spaces that help nurture, heal and restore.[vi] By breaking down their perceived discomfort with institutional facilities, our hunch is that students will more easily involve themselves in the educational center and the opportunities that it will provide. And, this would enable us to integrate natural environments to provide opportunities for students to recover from mental fatigue and to perform at higher academic levels.[vii]

This approach, as we suggested earlier, moves our practice away from conventional values in the marketplace or an architecture-as-service model. This approach maintains a connection to criticality, craft, imaginative engagement, and hunches.[viii] It also connects the practice to concrete research relevant to specific cultural and programmatic needs. As such, this is a process that focuses on the built environment for its restorative and educational value as well as its potential experiences that may be greater than what meets the eye.[ix] This paper will illustrate the ways that research from fields such as environmental psychology and the environmental sciences were blended into our design practices based upon experience, precedent and intuition in ways that shift the focus from 'what can be done' to 'what ought to be done'.

[i] Merrydawn Duckler, 2016. Somewhere on the Road to Nowhere: Double Negative. at Length: http://atlengthmag.com/art/somewhere-on-the-road-to-nowhere-double-negative/#fn3

[ii] Eric's thoughts emailed to Jose following a full day charette on the Global Alternative Community School, January 10, 2019 (6:20AM).

[iii] The charette in question involved a 57,000 square foot prototype high school in Las Vegas, Nevada. This school, known as the Global AAXXAAXX AADDXXXX School, is in the proposal stage and the office of AAASSMMMMM invited the second author to participate in a design charette involving the principal of the firm (and first author) and 6 interns who are also students in a local university's architecture program. In this sense, the students had the benefit of developing a mentoring relationship with the first author through academic settings that then extended into professional settings. The charette provided a space for outside academic input and inter-disciplinary learning tied to a hunch and some expressed desires from the client.

[iv] And, we rely upon a straightforward definition of the word "research" as I approach this goal (these definitions are taken from the American Heritage College Dictionary, Third Edition): research 1. Scholarly or scientific investigation or inquiry. 2. Close careful study. researched, researching, researches. 1. To study (something) thoroughly so as to present in a detailed accurate manner.

[v] Research into things like hunches has typically been framed by notions of intuition, which have been shown to be the result of a significant amount of processing in the brain. In this sense, the brain is a large predictive machine, constantly comparing incoming information and experiences against stored knowledge in order to predict what may come next. This is known as a "predictive processing framework" that often enables scientists, for example, to pursue a hunch through rigorous testing that is built upon extensive experience. See: Clark, A. (2013). Whatever next? Predictive brains, situated agents, and the future of cognitive science. Behavioral and Brain Sciences, 36(3), 181-204. doi:10.1017/S0140525X12000477; see also: Wilson, T. D., Lisle, D. J., Schooler, J. W., Hodges, S. D., Klaaren, K. J., & LaFleur, S. J. (1993). Introspecting about Reasons can Reduce Post-Choice Satisfaction. *Personality and Social Psychology Bulletin*, 19(3), 331-339. https://doi.org/10.1177/0146167293193010

[vi] Students in this school often have been detained at the US border and often released without a parent; so, many of these students arrive and have only the school to call their home. Faculty, in this sense, often have to provide additional support services and become essentially a family figure for the students that they see. The clients expressed a desire that the school help support the students and the work that the faculty must perform.

[vii] Rita Berto, 2005. Exposure to Restorative Environments Helps Restore Attention Capacity in the Journal of Environmental Psychology 25. 249-259; see also: Taylor, A. F., Kuo, F. E., & Sullivan, W. C. (2001). Coping with add: The Surprising Connection to Green Play Settings. *Environment and Behavior*, 33(1), 54-77. https://doi.org/10.1177/00139160121972864

[viii] Our experience with this kind of hunch reaches back to the early 2000s and another experimental educational and research facility located on the campus of the University of XYZ in City to be named later.

[ix] See: K.G. Scholl and G.B. Gulwadi, 2015. Recognizing Campus Landscapes as Learning Spaces in Journal of Learning Spaces 4, No.1. 53-60.

The Teaching Didactics of Álvaro Siza

Pedro Pinto, Dinâmia Cet / ISCTE-IUL

"There was a very thorough study of the analysis of the problems of a project, followed by a phase of synthesis, with this idea that knowing all the problems in question, this is the moment to start for the project. In addition, I did a first course like that, very committed (...). I concluded at the end of a year that the works were very balanced, that is to say, they were straightforward, there were no absurdities, but they were frustrating, most of them. There were differences, but the average was sad, it had no great interest. I thought it was not the right method, and the next year I did a completely different experiment, in the sense that the overall solution hypothesis was as much starting point as the study that gradually increased in density of all sorts of problems. Therefore the design accompanied the deepening of the problems and was sufficiently flexible and mouldable to accompany this gradual deepening". Álvaro Siza, 2009[1]

"The examples of open spaces I know... I couldn't agree less". Álvaro Siza, 2001[2]

The world-renowned Portuguese architect Álvaro Siza (1933), graduated from the Superior School of Fine Arts of Porto (Escola Superior de Belas Artes do Porto, or ESBAP, 1949-1955), awarded with the "Mies van der Rohe" prize in 1988 and the "Pritzker" prize in 1992, was also bestowed with 18 doctoral degrees of "honoris causa". In addition, he has been visiting professor in schools like the EP of Lausanne, the University of Pennsylvania or the GSD of Harvard, this last one as "Kenzo Tange Visiting Professor".[3] He was also assistant professor in his "Porto school", in a semi-continuous regime, between 1966 and 2003, when reaching an age limit, he had to retired from teaching.

In his life-long relation with in the Porto school, he played a fundamental role in the overall construction of the school reputation, and, simultaneously, he witnessed, as a student and as a educator, the changes in architecture education over almost five decades. He was still a student during the period of transition from "beaux-arts" system (in Portugal until 1952-57 reform of the artistic education) to the "modern" way of teaching architecture (from 1952 until the social and cultural turmoil's of 1969)[4]. He would have an important role, both as an assistant teacher and as leading practitioner, in the consolidation of the school during the Portuguese evolution towards a democratic regime, being actively involved in the pedagogical debates and experiments around the troubled revolutionary period (both preparing and evolving after the democratic revolution of April 1974).

It was a decisive moment, from which would arise a consolidated pedagogical methodology. From the post-revolutionary times of 1976, until 1984, the year in which the school gained full autonomy from the Fine Arts School of Porto, assuming the form of a university college (Faculdade de Arquitectura da Universidade do Porto, FAUP[5]). A more visible and well-known aspect of Siza association with the FAUP are his famous designs for the Carlos Ramos Pavilion (1985-1986, Images 1 and 5) and the new

school facilities of FAUP (1986-1993, Images 2, 3 and 4). Somehow both buildings embodies the symbolic transition from a traditional vocational training of architecture to a new (or not so?) university environment, thus, one may affirm, that these buildings are proposing a pedagogical space that may be directly related to the an idea of education. This idea of a school was built over a long period. It considered several factors:

- it sought different methodologies;
- rehearsed relations in-between research and practice;
- relations of architecture with exact and social sciences;
- experimented the "denying the drawing" (d) (which, according to Álvaro Siza, was a very much slandered period by those who were against the socialist aims of the democratic revolution of 1974);
- lived the radical pedagogical experiences associated with the legendary SAAL[6] process (1974-1976), in which the school (faculties and students) were directly involved in real practice designs;
- returned to the "resume of drawing" (f), again as a stronghold of a disciplinary and pedagogical methodology, which would gain force precisely against the perils associated with the entrance in the university.

In this paper-communication, we propose a review of this singular history, but also, and above all, we propose an insight into the Álvaro Siza's positions on architectural education and on his didactics at the Porto School.

To accomplish this, we rely on a set of Siza 10 texts generically about architecture education (published in a 2009 in collection of Álvaro Siza written work), as well as on specific documentation about his pedagogical experience at the Porto School. This latter one compromises a series of documents in which Siza takes explicit positions on the pedagogical direction of the school and, on the other hand, there are testimonies of its didactics in the classroom, related to the units he taught. We will focus on his times as an assistant professor in "Composition of Architecture" (1966- 1969), and as assistant professor of "Constructions" and of "Static" (1976-1986). Between 1969 and 1976 Siza refused to teach at the school, complaining both with the political regime in Portugal and with the school reaction to it, that is, answering against its pedagogical project. Culminating this period, we will observe the relations between Siza pedagogical and didactical experience and the design of the new FAUP facilities in-between 1984-1993.

[1] Álvaro Siza, interview, Raquel Paulino, PhD these, 2009. In his first teaching experience in the 1960s, Siza followed the examples of Nuno Portas in Lisbon, who at that time experimented the methodological proposals disclosed in Portugal since the Design Methods Conference of 1962 (London, Imperial College). In this context, the proposals of D.G. Thornley, G.H. Broadbent, C. Jones and C. Alexander de D.G. Thornley, G.H. Broadbent, C. Jones and C. Alexander gained importance.
[2] About the debate on the pros and cons of a wide space for worksops, without any separation between classes, referring, namely, to the examples of Louis Khan, Vilanova Artigas or Mies van der Rohe. Interview, ECDJ 4, FCTUC, Department of Architecture, Coimbra.
[3] Álvaro Joaquim de Melo Siza Vieira was born in Matosinhos in 1933. He studied Architecture at the Superior School of Fine Arts in Porto between 1949 and 1955. He is a member of the American Academy of Arts and Science and Honorary Fellow of the Royal Institute of British Architects, the AIA / American Institute of Architects, the Académie d'Architecture de France and the European Academy of Sciences and Arts. He is Doctor Honoris Causa by several universities, like the Polytechnic University of Valencia (1992), the Federal Polytechnic School of Lausanne (1993), the University of Palermo (1995), the

Menendez Pelayo University, Santander (1995), the National Engineering University of Lima, Peru (1995), University of Coimbra (1997), Universidade Lusíada (1999), by Federal University of Paraíba, João Pessoa - Brazil (2000); by the Università degli Studi di Napoli Federico II, Polo delle Scienze e delle Tecnologie, Naples - Italy (2004); By the University of Architecture and Urbanism of Bucharest "Ion Mincu" - Romania (2005); By the University of Engineering of Pavia - Italy (2007).

[4] In Portugal, the architectural education achieved "higher education" status with the 1950-57 artistic education reform. Within the only two schools in the country (the fine-arts schools of Lisbon and Porto, ESBAL and ESBAP), it was a moment of transition from the old "beaux-arts" system to a "modern" model of education, in which the vocational and artistic issues were mitigated in favour of social and exact sciences, more alike "modern" ideals of social, technological and economic progress. From 1969 the two schools entered a period of criticism of the "modern" curricula and of the "scientism" of the 1952-57 reform.

[5] Legally created in 1979 and formally created in 1984.

[6] SAAL : "Serviço de Apoio Ambulatório Local". That is "Local Ambulatory Support Service", an architectural and political project created (by the architect, urbanist and pedagogue Nuno Portas) a few months after April 25, 1974. This program involved direct participation and interaction between, architects and other technicians - like sociologists, economists, engineers and al., students and local communities, to meet the needs of disadvantaged populations. It was one of the most pioneering projects in Europe of its time. Siza coordinated 2 SAAL brigades at Porto: S. Vitor (1974-1976) and Bouça (1972-1979), in which, one of the students involved was Eduardo Souto de Moura.

The Vessel, the Tower, and the Ruin: Investigating Presentiments in Beginning Design

Joss Kiely, Louisiana State University
Kristen Kelsch, Louisiana State University
Anca Matyiku, McGill University

Assuming a pedagogical hunch rooted in the need to find new ways to cultivate beginning design students' understanding of space and form, we set out to compose a studio that employed a series of tactics concentrating on a gradual but progressive development of spatial sensitivities. Our aim was to simultaneously mystify and demystify core underpinnings of architecture by betting on the richness of productive collisions—whether they are spatial, representational, or historic. The Vessel, the Tower, and the Ruin was organized around three radically different demands on the role of making and unmaking.

We operate under the premise that students of design, at the outset, need to engage their own curiosities, speculations, and urges within a framework that affords them a level of guidance while promoting individual freedom. Admittedly, this is a delicate process. The resulting studio upends preconceived notions of architecture's disciplinary boundaries by foregrounding history, engaging the unconventional, and allowing conversations to seep beyond the expected to consider subjects as disparate as a winter squash and Pruitt-Igoe.

We began by exploring the vessel by replacing the frequently cited bell pepper as illustrative of the section cut with a series of *cucurbitaceae*, better known as winter squash. Students were asked to select from a variety of squash assigned to them and arrive in studio on the first day with their specimen. The range of squash included acorn, butternut, delicata, kabocha, and confetti. Each had a very different kind of spatial quality on the interior with which most students were unfamiliar. Over the course of a

week, students produced a series of fast/medium/slow drawings that explored the exterior of the squash and conjectured about its interior space. This was followed by a slow disarticulation of the squash through carefully designed subtractive methods that provided the basis for the final section drawings.

The second project took its cues from a well-known series of water tower photographs from across the United States taken by Bernd and Hilla Becher. Each student again selected a specimen and began to produce a series of projection drawings from the photo including an elevation, a vertical section, and two plans—one through the water tank and the other through the structure below. This challenged students to remove the perspective inherent in photography, to imagine what the interior might look like, and to recognize how the structure differed between the towers given the materials out of which they were constructed (concrete, steel, etc). Students were then asked to create physical collages that "occupied" the interior condition of their towers, and were again tasked to disarticulate the space within the vessel. At this point, issues of history and theory were introduced with a collective performance of the Manifesto of Futurist Architecture (1914), after which students wrote retroactive manifestos for their water towers and discussed excerpts of Rem Koolhaas' *Delirious New York* (1994).   The third and final project, The Ruin, explores notions of fixity and transience in the built environment through an interrogation of Kirby Smith Hall, a modernist residential tower on campus—one in which a handful of the students currently reside. The project was launched with a viewing of the demolition of Minoru Yamasaki's Pruitt-Igoe Public Housing project and a discussion of Charles Jencks' "Part One: The Death of Modern Architecture," in *The Language of Postmodern Architecture*. The remainder of the semester aimed to reiterate issues of space versus form through projection drawings and models of Kirby Smith, in which the students located their architectural interventions as polyps or growths that invade the gleaming white modernist tower. The studio concludes with a week-long event that will serve as the first "unbecoming" of Kirby Smith, which will be followed by its literal demolition in a year's time.

The Vessel, the Tower, and the Ruin is intended to introduce students to a wide array of issues and problems that are central to architecture—including cultural awareness, selective decay, and the architectural event—over the course of the semester. This paper explores, in detail, moments from the spaces, their related discussions, and the tactile traces of investigation as a means to put forth new ways of addressing questions of engagement and the responsibility of challenging the aims of a beginning design education.

Designing towards Ecological Environments: A Modular Approach to Structure a Design Studio Sequence
Oswald Jenewein, University of Texas at Arlington

A contemporary design studio must tackle ecological topics as architecture materializes itself within the rapidly changing natural environment. This paper calls for the education of responsible designers as critical thinkers on their path to becoming global citizens. It

will use five studio projects assigned in the past two years to demonstrate a modular course sequence which aims to convey a general understanding of architecture as part of the complex systems in a Post-Industrial Era.

Studio Modules
The sequential modules titled Operations, Relationships, Conditions and Typologies lead to the final module Regimes. These studio courses range from a foundation level to advanced courses in the graduate program. The modules are interconnected components depending on each other. While each module represents a semester-theme, all modules are, to a certain extent, part of each semester. Each module informs the next one and builds upon the previous theme. The modules ideally adapt to changing internal or external parameters and focus on a particular studio topic, student skill-set and allow for evolving projects. This paper aims to highlight the overall sequence of modules and the student learning outcomes as they relate to ecological environments through design not on explaining particular studio projects.

Operations
To design, we need to know how to operate within and manipulate the properties of space. Translated into a contemporary language of (digital) design and formal experimentation, space is defined by geometric entities, a set of precisely calculated lines and surfaces that form volumes. Generating and manipulating geometries requires an understanding of the relationship between parts and between the whole and its parts. At a foundation studio level, (Design) Operations form the basis for developing a three-dimensional skillset to perceive, form and transform space as a geometric entity. Understanding the design and qualities of a geometric object and the properties of space, its parts, and the dependencies between the parts, allows to zoom out and relate the object to other objects and to a datum.

Relationships
Once we deal with several objects the notions of orientation, scale and placement become significant. While the object becomes secondary, the relationship from the object to its (geometric) surroundings and ultimately the relationship to other objects moves to the foreground. These relationships between objects and their surroundings require thinking beyond the part and a group of parts: any given datum, the concept of place and its topographical, yet still geometrical, qualities need to be addressed as an external premise to a project. This module is built around a narrative that links a formal design concept to a programmatic idea of events that take place within and around architectural creation.

Conditions
As the surroundings steadily become more detailed, they move towards concrete site-conditions contextualized into the natural, cultural and built environment of a place. The design of an architectural object is not just strongly connected to a specific site in a specific place, but the exposure to these site-conditions becomes a premise for design decisions on both the scale of the object and the surrounding field. A set of ecological parameters inform the design in addition to formal investigations of the (built) context.

Field trips are an integral part of this semester, as well as community meetings off-campus to develop and gather first-hand experience and to understand architecture as part of a community.

Typologies
This paper defines architectural typologies as complex systems of interconnected parts and programs, embedded into a specific place that need to address a set of material and immaterial parameters, internally and externally. In an evolutionary process, the geometric object has first become a spatial entity, to finally become a complex architectural being. Increasing the complexity of an architectural project is not just tied to an increased scale, advanced digital skills of form-making, fabrication or animation, it is, to a greater degree, the respectful understanding of architecture as interconnected part of its surroundings. The goal of this module to investigate the idea of a type, to eventually develop hybrid typologies in future scenarios. Regimes The focus shifts beyond the scale of architecture or the city to the network of Spatial Regimes. These Regimes, or rules, demand architectural decisions, derived from natural conditions and cultural contexts relating to the phenomenon of place. They rely heavily on socio-economic factors, logistical processes, geopolitical trends, and capitalist societies. Systems Thinking is an integral part of this module. A site-condition becomes a representative of culture, of people, cities, states and countries. Holistic analysis demand to further introduce the concepts of abstraction and to utilize diagrams for data visualization to inform the design phase. This module is research-heavy and is built upon interdisciplinary collaboration with public and private stake-holders. Implementation While the major part of this paper describes the mentioned studio modules, this part focuses on a brief synopsis on the practical implementation of this concept into the curriculum. It characterizes unpredictable parameters like studio culture, student skill-set, or misjudgments by both student and/or faculty which made certain projects more or less successful.

In conclusion, the paper suggests improvements in better aligning the schedule and complexity of modules to each other. It outlines a vision on improving and summarizing certain parts to allow for more flexibility and to create more synergies between the five modules.

Applying Academics' HUNCHES into Reality III

Friday, March 29, 2019
14:30-16:00

Bridging the Gap: Architecture Without Borders
      Paolo Sanza, Oklahoma State University

Academia is a complex world. Unlike many other higher education fields, architecture teaching in the United States travels on a cumbrous path: it is conscious of not being innovative but reactive; of being introverted rather than reaching; of being thought-provoking while unable to impact. Reacting to the forces that have shaped this path it is not a simple task, and possibly, at least in the public education realm, merely impossible. But acknowledging the deficiencies is the first step towards changes. Windows of opportunities rise even in the most restricted environments, and if there is beauty in architectural education, is the freedom that can be, for the most, exercised in the architectural design studio. It is in this magical setting that schooling does not have to follow preconceived paths or methodologies, and where experimentation is the visible result of an instructor's courage.

A few years back this author had a compelling occasion to embark in a paradigm shift in architecture education. Triggered by a change in curriculum that left the graduating semester of the five-year architecture program deprived of a design studio, this author advanced the hypothesis of crafting an elective architectural design studio that drew closer to the intricacy of international professional architecture practice. The author saw in the plethora of architectural competitionsand their multifaceted delivery requirements offered in his homeland, Italy, and partnering with an Italian architect the perfect venue to test his pedagogical aspirations of infusing the production of knowledge and alternative insights in professional practice to the design studio while experimenting on diverse organizational structures. Being free from any school's mandated sequences and accreditation demands, the elective design course, for instance,could be molded in such a way where conventional managerial strata both in the academic and professional studio environments could be revisited allowing for all participants to engage in the design and delivery process in an egalitarian manner. As the competitions would be developed in partnership with an Italian architect by utilizing the latest web-based communication technologies, the course would further give students the unique opportunity to thoroughly engage with professional practice in Italy while "savoring" the metamorphosis of contemporary practice, never as before so un-preoccupied from the constraints dictated by physical distances.

Connecting the author and a small group of fifth-year architecture students with a boutique architectural practice in the Italian city of Ivrea, well renown in architecture, urban and industrial design circles, for its association with the 1908 founded typewriter manufacturer Olivetti, the elective design studio Architecture Without Borders, aka The Italian Job, marks this year its sixth inception. During this time the studio has worked in professional design competitions addressing diverse typologies, urban conditions,

scales, socio-cultural, heritage, and sustainability agendas, and with projects sited in environments and climatesas dissimilar as the Alps and the seacoast. The choice of which competition to tackle has not been, however, the resultant of the author or the Italian architect expertise or personal pursuits, but rather selected to provide for architectural ventures that students have not faced in their previous design studios, and that could simultaneously accommodate not solely research and theoretical investigations on several levels ranging from urban theories to visual communications, but also the exploitation of analog and digital craft. The competition structure is also analyzed to a great extent to give students the best possible professional experience and opportunity.

This paper discloses the genesis, paths, exchanges, outcomes, and reflections of this remarkable exploration in architectural education aimed at seeking novel strategies in addressing the disjuncture between academia and profession that have characterized the education of an architect.

Architectural Education and the Politics of Architect-Client Relationship: A Case Study from Jordan
> Ahlam Harahsheh, The University of Sheffield

Understanding recent developments in architectural education is one of the key factors in establishing the present state of architectural practice in Jordan. This paper looks closely at two important aspects that impact on architectural practice and the built environment; the present state of architectural education in several Jordanian universities, and the politics of the architect - client relationship. The importance of architect-client interactions and the implications for the design process, completed buildings and the wider built environment, is well documented in literature. This paper discusses the findings of a research project examining the nature of architect - client relationships in Jordan. Syllabuses in ten architectural schools were examined from an architect- client relationship perspective. Interviews were conducted with several academics to see whether and how this was integrated into their teaching plans, and with architects to gather their opinions on the skill level of architecture graduates in terms of their ability to communicate with clients. This paper is part of an ongoing PhD research project entitled: 'Complexities of Communication and Practice in Architect-Client Interactions' that aims to investigate design stage communication between architects and clients in residential projects in Jordan. The role of architects in addressing wide-scale problems in the built environment is still not fully recognised in the Jordanian context. By studying architect - client communication in the design stages, this research proposes improvements that demonstrate the additional value that architects can bring to the construction industry, particularly in housing, through improved design solutions.

Teaching and Researching Contemporary Professionalism: The Value of External Networks

Robert Hyde, Manchester School of Architecture

Relevance
External Networks are utilised across Architectural Education. However, there is very little research into their value within this context. Professionalism is a critically important and relevant area of Architectural Education. This is usually integrated within studio along with separated Professional Studies Courses. Whilst there is generic research and constant debate on the teaching of Professionalism within Professional Institutes, Industry and Academia, there is very little specific research focused on an Architectural Education Context.

Academic Context
The paper anchors itself within a wider body of historic and contemporary literature of diverse pedagogies and learning theories.   Reference is made to 'Authenticity' (Kreber, 2013), 'Reflection' (Schon,1983), 'Signature professional pedagogies' (Shulman, 2005), 'Knowledge sharing' [Styhre, 2016], 'Tacit knowledge' (Polanyi, 1966), 'Wicked problems' (Churchman, 1967), 'Mode 1 and mode 2 knowledge' (Gibbons et al, 1994), Networked learning with focus on 'Communities of Inquiry' [Piece & Dewy], 'Situated learning' and 'Communities of Practice' [Lave & Wenger, 1991 & Wenger, 1998), 'Connectivism' [Siemens, 2005 & Downes, 2007], 'Networks of Practice' [Seely Brown & Duguid, 2000) and 'Learning as a Network' (Chatti, 2010] pulling together 'Connectivism', 'Complexity theory' and 'Double loop learning' to allow development of continuous creation of 'Personal knowledge networks' and allowing 'Self-authorship' (Baxter Magolda, 2008).

AIM
The aim is to demonstrate the value of integration of External Networks using the vehicle of an innovative final year Professional Studies Unit within xxxxx School of Architecture which has run since 2012/13. This unit has developed its teaching around an extensive External Network and problem based learning with designed outputs/outcomes of both Project and Business models/structures and of the wider development processes, with students developing their own speculations on future contexts and their personal professional trajectories into them.

Methods/ Data Sources
Qualitative data was gathered from unstructured student/graduate comments, external examiner comments and structured questionnaires to both current students and Alumni from the last several years to capture their assessment on the value of the External Networks integrated into the Unit   Quantitative data was gathered including academic performance, employment statistics over time as the External Network has grown   This data from the last several years was then analysed, compared and presented graphically.

Findings/ Conclusion

The findings in both the qualitative and quantitative results demonstrate there is a huge value in the utilisation of External Networks in the Professional Studies Unit.

Future
The intention is to constantly track the students though the Alumni network with the same questionnaire 1, 3, 5, 10 years post graduation.

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Technological Disruption and the Practice and Teaching of Architecture
Darius Sollohub, New Jersey Institute of Technology

The production of knowledge in professional practice and its dissemination in the academy stand on the verge of profound disruption. In 2013, the Oxford University researchers Frey and Osborne examined over 700 U.S. occupations and their susceptibility to technological change, projecting the computerization of architectural drafters at 52 percent.[1] Eliminating one out of two drafters, the traditional entry-level position for architects, will potentially sever the umbilical cord of internship that connects practice to the academy. Projections by others who study professions are even more dire.[2] This paper will discuss the economic upheaval that began this trajectory and how both the profession and academy are adapting and can adjust further. An awareness of the demographic, technological, and economic change is essential in navigating the turbulence of technological transformation in the twenty-first century.   The Great Recession, beginning in the late 2000s, impacted the American architectural profession and academia in significant ways. The American Institute of Architects' Billing Index lost almost half its value from a high of 60.5 in 2005 to a low of 34.4 in 2009.[3] The severity of the downturn forced architecture firms to cut almost a third of their staff and

dramatically reorganized practice; causing firms to shrink, forcing many to merge, and cleansing the market of all but the smallest of nondigital firms.[4] Economic turmoil also affected American architecture schools. The recession caused professional architecture programs to shrink 14 percent between 2008 and 2015 (alternate accounting assess this even higher).[5] While the causes for declining enrollments are many, poor economic prospects have undoubtedly played a role in discouraging students. A 2012 Georgetown study reported unemployment among architecture graduates as twice that of those with engineering or business degrees[6].

These declines occurred against a backdrop of dramatic technological change in global labor practices and higher education. Beginning in the recession, employees began using less square footage: between 2010 and 2015, office space per worker decreased from 225 square feet per worker to 150 square feet globally. Despite the decrease in gross area, other amenities blossomed, pioneered by companies like WeWork.[7] Within this "sharing economy" participants share employees, infrastructure, suppliers, knowledge, even customers. This new economy has atomized many businesses, which increasingly rely on freelancers. Some have become entirely nomadic, with no fixed address at all.   A parallel disruption has altered American academies as digital learning proliferates and renders the need to be in the classroom increasingly optional. Undergraduate students taking online courses rose from 15 percent in 2008 to 47 percent in 2014,[8] and the sudden proliferation of Massive Open Online Courses (MOOCs) in 2008, and their early adoption by elite universities, augers yet more dramatic change.[9] Universities not able to join this transformation by producing their own online curricula may suffer. Kevin Carey in his book, *The End of College*, predicts that perhaps only 50 American colleges and universities will survive the disruptions of the twenty-first century, with digital technology causing schools to be absorbed or cease to exist.[10]

In their 2015 *Future of the Professions*, Richard and Daniel Susskind assert that automation and innovation will effectively dismantle every profession and its teaching apparatus in the near future, specifically mentioning architecture alongside medicine, law, and even the clergy.The Susskinds claim that "we are on the brink of a period of fundamental and irreversible change in the way that the expertise of these specialists is made available in society."[11] In their view, the current professions are antiquated, opaque and no longer affordable, with the expertise of the best enjoyed only by the few. The Susskinds conclude that as humanity inevitably transitions from a "print-based industrial society" to a "technology-based Internet society," the "grand bargain" struck between the laity and the professions will eventually be terminally rescinded.[12]   The dire forecasts for the architectural academy and profession parallel those threatening other pillars of society. Only by proactively dealing with any undermining to the connection between the practice and teaching can architecture position itself to not only survive, but to potentially advance its agency in this transformation. This paper will discuss the historic background of this change and propose strategies to absorb it.

[1] Frey, Carl B. and Michael A. Osborne. "The Future of Employment: How Susceptible are Jobs to Computerisation?" Oxford Martin Programme on Technology and Employment -Working Paper (Sep 17, 2013) Retrieved 5/16/16 from:

www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf. They estimate that 47 percent of total American employment is at high-risk and could expect to be automated within the next two decades. While they estimate automation will be principally confined to low-skill and low-wage occupations, they also find that "algorithms for big data are now rapidly entering domains reliant upon pattern recognition and can readily substitute for labor in a wide range of non-routine cognitive tasks. A McKinsey Global Research later study supports Frey and Osborne, finding that roughly half of all jobs are at high risk with extent of change affecting $16 trillion in current wages in the global economy. McKinsey projects that about two-thirds of all occupations will have at least one-third of its activities automated. They assert that more occupations will change fundamentally than will be automated away. See McKinsey Global Research. "A Future That Works: Automation, Employment, and Productivity." (Jan 2017)

[2] Susskind, Richard and Daniel. *The Future of the Professions*. (Oxford: Oxford University Press, 2015).

[3] *Architect: The AIA Magazine* (Jan 2014) pp.110-11 The Architectural Billings Index (ABI) is computed as a diffusion index, with the monthly score calculated as the percent of firms reporting a significant increase plus half the percent of firms reporting no change. Comparisons are always to the previous month.

[4] 2012 AIA firm survey as reported in *Architect: The AIA Magazine* (Jan 2013) p. 112. By late 2014, the recovery seemed to have begun with the AIA Billing Index rising to 54.6 by September. See Baker, Kermit "Architecture Firms Remain in Growth Mode," *Practicing Architect* (AIA: Nov 2014) Retrieved 5/8/15 from http://www.aia.org/practicing/AIAB104905

[5] ACSA. "Architecture Schools Face Budget & Enrollment Changes," (Mar 22, 2013) Retrieved 4/2/14 from http://www.acsa-arch.org/acsa-news/read/read-more/acsa-news/2013/03/22/architecture-schools-face-budget-enrollment-changes#.dpuf. Many schools made up for this deficit by enrolling more foreign students, whose percentage in American architectural schools increased from 4 percent in 2009 to 24 percent by 2016. A comparison of the National Architectural Accrediting Board 2009 Report on Accreditation in Architecture Education (February 2010) with data from 2016 finds the nonresident alien population increasing from 6% of enrollment overall in 2009 to 24% when counted in 2015-16. See Association of Collegiate Schools of Architecture. "Trends in International Student Enrollment in Architectural Education." (December 2016) Retrieved 2/24/17 from www.acsa-arch.org/resources/data-resources/international-students-in-architectural-education/. This strategy may ultimately prove no panacea if more restrictive federal immigration policies deter international students from applying. An 18 percent drop nationwide after the 9/11 attacks serves as a reminder just how volatile foreign enrollments can be. See Fischer, Karin. "Colleges Are Wary of Global Economy's Effect on Foreign Enrollments," *The Chronicle of Higher Education* (Jul 16, 2012) Retrieved 2/11/13 from: http://chronicle.com/article/Colleges-Are-Wary-of-Global/132875/

[6] Georgetown University Center on Education and the Workforce. p. 7 A follow-up 2015 report found unemployment among architecture graduates still high with unemployment levels of those surveyed exceeding experienced workers with only a high school diploma. See The Georgetown University Center on Education and the Workforce. Anthony P. Carnevale, Ban Cheah. "From Hard Times to Better Times: College Majors, Unemployment, And Earnings." (Feb 19, 2015) p. 8 Retrieved 6/3/15 from https://cew.georgetown.edu/wp-content/uploads/HardTimes2015-Report.pdf. While architects may have been buoyed by the U.S. Bureau of Labor Statistics projecting a 17 percent increase in demand for architects by 2022, by 2016, it had scaled back its projection to no growth, suggesting that the decrease was less cyclical than permanent. See Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2014-15 Edition, Architects. Retrieved 5/30/15 from http://www.bls.gov/ooh/architecture-and-engineering/architects.htm

[7] U.S. General Services Administration. "Innovative Workplaces: Benefits & Best Practices." (2006) Retrieved 11/16/15 from: http://www.gsa.gov/graphics/pbs/Innovative_Workplaces-508_R2OD26_0Z5RDZ-i34K-pR.pdf

[8] Dahlstrom, Eden, and Jacqueline Bichsel. "ECAR Study of Undergraduate Students and Information Technology, 2014." Research Report. Louisville CO: ECAR (October 2014) Retrieved 5/7/15 from: https://net.educause.edu/ir/library/pdf/ss14/ERS1406.pdf. p.22. Although many report doing so more as a matter of convenience or necessity and not necessarily preference

[9] Hollands, Fiona M. and Devayani Tirthali. "MOOCs: Expectations and Reality." Center for Benefit-Cost Studies of Education, Teachers College, Columbia University (May 2014) Retrieved 5/7/15 from: http://cbcse.org/wordpress/wp-content/uploads/2014/05/MOOCs_Expectations_and_Reality.pdf

[10] Carey, Kevin. *The End of College: Creating the Future of Learning and the University of Everywhere* (New York: Riverhead 2015) pp. 72-3. Schools most at risk include public universities hampered by decreases in state support, private universities without strong endowments, and for-profit universities operating on thin financial margins.

[11] Susskind, Richard and Daniel. *The Future of the Professions*. (Oxford: Oxford University Press, 2015) pp. 1-4.

[12] IBID p. 27. The Susskinds use Donald Schon's description to describe the grand bargain: "In return for access to their extraordinary knowledge in matters of great human importance, society has granted [the professions] a mandate for social control in their fields of specialization, a high degree of autonomy in their practice, and a license to determine who shall assume the mantle of professional authority."

The Virtual, The Actual, and The Aspen Idea

Amir Alrubaiy, University of Colorado Denver

Case

Common discourse around the relationship between teaching and practice tends to center either on the proper influence one ought to have over the other, or the mechanism by which the knowledge developed in one transfers to the other. These discussions are possible because the unexamined assumption that teaching and practice are actually discreet "things" that may be in relationship to one another. This binary construct, while convenient and useful to the degree that it allows a sense of operational clarity within each area, also generates unproductive isolation and dissociation within each zone. Teaching and practice become opposing others and it becomes necessary to construct a connection between that which was never really apart.

Framework

This paper challenges the distinction in kind between teaching and practice as well as the notion that the architects' work among these activities is anything but embodied in the terrain that connects them. It proposes that teaching and practice are different actualizations of the same animating spirit.   The vehicle for this challenge is a description of the development of, and activities within, an ongoing intensive collaborative graduate level design course taught in Aspen Colorado by The University ___ and ____ Architects. Through this description, the argument will draw a thread through a powerful ethic known as The Aspen Idea, Gilles Deleuze's conception of the actual and the virtual, and Maurice Merlau-Ponty's and Juhani Palasmaa's concepts of embodied thought. As articulated by the philosophers Albert Schwietzer and Mortimer Adler principally, the Aspen Idea is an ethic that seeks to organize life around the cultivation of a vital body, a curious mind, and a striving spirit. This ethic guides the creative practice of the many of the architects in Aspen's Roaring Fork Valley, and serves as guide for how to break down the perceptual boundaries between the areas of teaching and practice within the course. By framing the connection of teaching and practice within Deleuze's description of the actual and virtual, the zones of body mind and spirit may be organized around these terms. Teaching (mind) and practice (body) become virtual instances orbiting and articulating the actual of architecture (spirit). Teaching and practice cease to be discrete entities and instead manifest across the "plane of immanence" of the course. Additionally, by extending Merlau-Ponty's and

Palasmaa's ideas of embodied knowledge, practice and learning are allowed to become intuitive and personal. Both are ultimately located within the perceptual field of each participant as this location becomes the productive terrain of the course. Teaching and practice are inexorably embedded in the physical and psychological phenomena of place.

Work
The course is a three week intensive design experience that embeds students within local design offices as well as the landscape and community of the Roaring Fork Valley. Students fold into the daily rhythm of the office and the community, absorbing their approaches and outlook. They live in a cloistered and close quartered setting that blurs the distinction between living and learning, work and play. For nearly all of the students, this is a jarring shift from the pace and setting of the urban university, and it sets them in a state of acute attention. Each week is an accelerated charrette project developed and run by the host firm. These projects strategically limit students to analog media and often require them to document and express subjects and conditions not immediately contextual to the projects. These constraints and techniques facilitate a direct and personal connection between observation and reaction. There is no technological veneer with which to wrap impressions and expressions. Students' work is a direct extension of their affected senses. The practitioners lead the development and delivery of each project. Their teaching is honest and without the polish of a practiced academic presence. As they enfold the students into their approaches and observations, they gaze into a critical mirror that exposes both the blind spots and insights in their own practices. They begin to articulate positions and processes that have gone unspoken for long periods of time. The teaching and learning roles begin to blur and invert and the continuum across teaching and practice begins to emerge. The projects are real and local. As such they impart a level of gravity and tactility to the explorations. However they remain radically exploratory, which keeps the expediency of productive practice at bay. Through the intense and intimate working relationships between educators, professionals, and students, delineations between roles and expertise begin to blur. The origins of ideas are obscured and critical development flows freely between the projects and the practice. Additionally, the close quartered living and isolation from typical concerns starts to break down the boundary between investigation and recreation. Work becomes play, play becomes investigation and teaching becomes learning for all participants. Conclusions By reconstructing the terrain across which teaching and practice actualize, a transformative shift occurs in the production of architectural knowledge. Students and practitioners begin to remove some of the conventional divisions that typical conversations about teaching and practice assume. The flows of information begin to enfold and reverse. Practitioners expose their habituated perceptions of their home to the innocent questioning of the students and students begin to show long tenured practitioners their process back to them. Throughout the course, teaching is embodied in the practice, and practice is cultivated in teaching. The rural alpine town setting and tactile analog media ground students to the personal and embodied nature of their perceptions and expressions. Bodies are vital. The practitioners articulate and examine their processes and assumptions through the

pragmatic filter of having to teach their ideas. Minds are cultivated. Each of these events occur around the ever receding spirit of actualizing architecture.

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The HUNCH and Architectural Pedagogies IV

Friday, March 29, 2019
16:30-18:00

Critical Reflection and the Role of the Architectural Educator in the Design Studio
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Access to "thinker-space that provides uncompromised inquiries to the best of all available knowledge" begins with an assessment of the two major players in the studio environment: the student and the teacher. Specifically, it must address the notion of critical reflection, as reflection is defined as being present in the tutorial model espoused in the design studio (Schön, 1984, 1985), and is identified as a specific way to transform information into meaning-making (Kolb, 1984). While much has been published about the development of reflection/critical reflection in student learning within the studio environment (McCarthy, 2011; Quayle and Paterson, 1989; Waks, 1999, 2001; Webster, 2004, 2008), less has been researched about the aspect of critical reflection development in the teacher (Webster, 2004). Much of the research, including that done by Schön, however, has called for explicit and profound reflection on the part of the teacher: "Architecture with its special tradition of practice and education, is one of the few occupations in which the process [of reflection-in-action] is manifest, honored, and maintained. Even here, I think, the process is largely implicity [sic]. Architects appear to reflect very little on their own practice of reflection-in-action" (Schön, 1984, p. 5). Schön (1984) defines reflection-in-action as "reflective conversation with the materials of the situation" (p. 5). He holds that "we all have, in greater or lesser degree, the capability of reflecting on what we know as revealed by what we do" (1995, p. 30). Furthermore, "if we want to teach about our 'doing,' then we need to observe ourselves in the doing, reflect on what we observe, describe it, and reflect on our description" (p. 30). Waks (1999), in his assessment of Schön's declaration that all professional practice should be modeled after design studio practice, asserts that "although Schön's master teachers all have had intense formal study of their professional arts, they have not (formally) studied anything about the art of teaching-coaching" (p. 315). This is indicated in others' views as well. Glasser (2000), in his reflections on architectural education formulated toward the end of his teaching career, notes: "It is not overstating the case to observe that few, if any, faculty enter the teaching ranks prepared to function as educators, as distinct from professionals. This is to say that most faculty, regardless of their abilities as practitioners, know very little about teaching skills - how people really absorb useful information" (p. 250). This aligns with Webster's (2004) view that "design tutors in architectural education tend to have little explicit knowledge of how students learn; why, as teachers, they do what they do; or how what they do leads to quality student learning" (p. 104). Consequently, "tutors need to be more critically reflexive about their tutorial practices" (p. 110-111) through developing "a student-centered approach to the role of tutor by assisting the student to manage and construct his or her own learning through *critically reflective dialogue*" (emphasis added, Webster, 2004, p. 109).

A Brief Overview of the Research
This paper responds most directly to the need for architectural educators to engage in critical reflection by understanding to what degree teachers of architecture practice critical reflection. The underlying research question is: In what ways do architectural educators practice critical reflection within the context of architectural education? The paper presents the literature on critical reflection from the field of adult education; a brief description of the intended methodology; and, preliminary analysis, interpretation, and representation of the narrative inquiry undertaken.

Critical Reflection
The definition for critical reflection as it is used in this paper relies heavily on the work of American adult education theorist, Stephen Brookfield. Brookfield (2016) specifies two prominent traditions in the development of critical reflection: analytic philosophy and American pragmatism (the preference for how it is used here). The latter intellectual tradition "sees reflection primarily as the analysis of experience" whereby the "critically reflective practitioner is one who constantly seeks out new information, new understandings of existing practices, and new perspectives" to identify "blind spots. In this tradition the best reflective practitioners are constantly open to revising their assumptions, and are willing to experiment with different ways of supporting those with whom they work" (p. 13). Brookfield (2016) grounds the understanding of critical reflection in critical theory: "for reflection to be considered critical it must have as its explicit focus the uncovering, and challenging of power dynamics that frame our decisions and actions" (p. 13). This includes "hunting" casual, prescriptive, and paradigmatic assumptions - those beliefs that characterize one's conception of the world and how he or she belongs in it (Brookfield, 1995) - as well as challenging hegemonic assumptions, "those assumptions we embrace as being in our best interests when, in fact, they are working against us" (Brookfield, 2016, p. 13).   Hegemonic assumptions are what Webster (2004, 2005, 2007, 2008) calls for architectural educators to deeply consider as they rethink the role of the studio (and by extension the juried critique) in architectural education. Critical reflection through hunting, uncovering, and challenging assumptions allows for radical shifts in the way educators think and practice. To Webster's point (2004), it allows for recognition of a whole person, an identity made up of more than just mental functioning. In adult education, the concept of whole person learning is defined as necessary for life-long learning (Apps, 1996; Palmer, 1998; Freire 1970/2000, 1998), and it exists for both the student and the teacher, as this belief recognizes that both parties are co-learners.

Experience as Valued Data
In further qualifying the pragmatist intellectual tradition for critical reflection, Brookfield (2016) offers that "pragmatists hold that the way to become more knowledgeable about how to make something work better is through three strategies: (a) constant experimentation; (b) learning from mistakes; and, (c) deliberately seeking out new information and possibilities" (p. 14). Furthermore, reflective practitioners under this tradition "solve problems by comparing experiences with peers, inviting critique of their efforts, and continually checking and revising their assumptions" (p. 15). Not only does this align with an attitude of life-long learning, but it also aligns with critical thinking as it

is sought to be developed in design students, through iterative design processes. Palmer (1998) and Apps (1996) contend that authentic teaching comes from an awareness of one's self (i.e., one teaches from who they are). It is the intention of this paper that to be an affecting and effective teacher, one must understand oneself through critical reflection.

To gain perspective on the understanding of the architectural educator's view of critical reflection (the purpose of this study), the methodology must align with the theoretical and epistemological underpinnings (Crotty, 1998). Because "pragmatism places ordinary, everyday experience as the subject of serious inquiry and the source of serious data" (Brookfield, 2016, p. 15), it makes sense to choose a methodology that does the same. Narrative Inquiry as it is defined by D. Jean Clandinin (and her various co-authors) does just that. For Clandinin (2016), "narrative inquiry begins and ends with respect for ordinary lived experience" (p. 18). Like critical reflection, narrative inquiry allows for responsive change on the part of those involved in the process; in fact, it is a goal of the inquiry (Clandinin, 2016). The methodology allows for both the researcher and participants to learn from the shared experience, and it constitutes the research as temporal, acknowledging that the sharing of stories takes place "in the midst" of carrying out their lives (Clandinin, 2016). This has great import for how educators can improve their practice in the tutorial mode of the design studio.

The narrative inquiry is conducted with participants from the author's home institution, seeking both intrinsic qualities of the collective faculty, as well as a better understanding of the faculty ethos that informs the development and practice of program goals and curricula. For this narrative inquiry, the following methods are used: life-story interviews focusing on the educator's experience of the design studio (as both a student and a teacher); participant journaling over a two-week period of studio design instruction, with focused prompts that seek to address uncovering assumptions; and, an image-elicited interview utilizing a drawing produced during studio, through the teacher-student interaction. The latter method recognizes what Schön (1984) refers to as the language of design, the responsive talking and drawing that takes place as teacher and student meet for a desk critique. Evaluation of the readings in adult education on reflection and authenticity, as well as research on creative practices, offers poetry as an appropriate format for representation, applicable here to displaying both individual and collective forms of experience of the architectural educator.

While the hunch, as an intuitive, often tacit action on the part of the educator is meaningful, it can be made more so through critical reflection. Such reflection on the part of the faculty would model the same for the student, encouraging "a space of learning that integrates craft and speculation, urge and fascination, skill and imagination, criticality and creativity, individual formation and social consciousness."

Everything Old is New Again: A Proto-Computational Curriculum

Thomas Forget, U. of North Carolina at Charlotte
Dean Crouch, U. of North Carolina at Charlotte
William Philemon, U. of North Carolina at Charlotte
Noushin Radnia, U. of North Carolina at Charlotte

This paper distills the logic and lessons of a recent curricular reboot in an accredited degree program in architecture. The new curriculum, in confronting the contemporary moment, addresses all four core concerns of this conference: the relevance of tradition amid a socio-culture renaissance; the drive to professionalize the education of the architect; the reciprocity between teaching and practice; and the post-critical turn away from autonomous criticality and toward applied engagement. That the conference convenes at the end of the first year of the new curriculum is serendipitous, providing a context in which to share insights and spark debate. The content and methods of the curriculum are already evolving in response to student and faculty critiques at the local level, and the conference is an opportunity to solicit further critiques at the global level, so as to steer future development and participate in the wider conversation.

The thesis of the paper and presentation is that education and practice are distinct spheres of the discipline that must remain autonomous. The primary goal of education, even (or perhaps especially) in a professional degree program, is not simply to train students to succeed as architects, but rather to develop habits of critical thinking and making that foster intellectual and methodological agility. Research suggesting that a solid foundation in the humanities leads to success in all types of disciplines underlies this premise, and, in that sense, it is nothing new. Classical approaches to the education of architects for over a century have emphasized a similarly humanist or "generalist" approach, and the post-critical turn must be understood as an opportunity to recalibrate the classical approach, not a sign that it is no longer relevant. The recent passage from critical distance to practical engagement is only the latest turn of a cycle that has recurred throughout the Modern era since the establishment of the discipline in the Renaissance. The challenge of the contemporary moment is to uphold the inherent dialectic of discourse and practice—to resist biasing the practical over the critical in the manner that the previous generation biased the critical over the practical. History is clear—architecture is both, and biases toward either direction are two sides of the same ideological game in which past blind spots are overcorrected.   Philosophy, as opposed to theory, steers the curriculum. Students read Plato and Aristotle to understand the inherent dialectic between two distinct modes of reasoning: *technê* ("technique or craft") and *epistēmē* ("science or knowledge"). Epistêmê and technê are logically distinguished insofar as they take different objects and have differing extensions (connotations). Technê is an instrumental form of reasoning organized by a specific end. Aristotle calls the end which organizes the technê its "ergon" or function. By contrast, epistêmê connotes a form of reasoning without a set static function; rather, it is one based on the being of things taken in their universality. Hence, epistêmê is an open-ended and variable form of reasoning, oriented towards a reasoning about the truth of being—how things really are in the world.

As a complement to that background, students also read the different interpretations of Modernism presented in, on the one hand, the catalog on the Museum of Modern Art's International Style Exhibition by Philip Johnson and Henry Russell-Hitchcock and, on the other hand, excerpts from the 1920s European journal *G*. In these texts, the classical dialectic between autonomy and engagement is laid bare in architectural terms, and in language strikingly similar to the literature on the post-critical over the past two decades, which students also read, from Michael Speaks' opening salvo through responses by Robert Somol and Sarah Whiting, Karsten Harries, George Baird, and others. The arc from classical philosophy, through the Modern movement, and into the contemporary moment demonstrates that the questions facing contemporary education and practice have precedent. The sky is not falling, and we can learn from history and philosophy.

At the same time, everything is new. Computational methods of design and fabrication are revolutionizing how we work and think to a degree that is unprecedented in the Modern era, and the pace of innovation is dizzying. Now more than ever, what we teach is less important than how we teach, as the tools we use today are unlikely to be directly relevant in the near future. In other words, even if the goal of education were to train students in practicalities, it would be a fool's errand.

In response, this curriculum begins with what we call a proto-computational foundation. Students learn the logic of computation through relatively classical methods of drawing, in which points define lines, that define planes, that define volumes. Drawing occurs in a digital environment and leads directly into digital modeling in a manner that demystifies how the digital model, and eventually the computational model, operates. However, drawing exercises are exceedingly complex and abstract, so as to push against the bias toward visual realism in digital modeling (i.e., the lack of agency in how we tend to literally "look at" our work in such environments). Students follow rules of projective and descriptive geometry to visualize architectures that are "hidden" within certain logics that defy experiential/visual immediacy. In particular, students learn how to draw what cannot be seen and how not to draw what can be seen.

The point is not to uphold classical drawing as a method, but rather to use it as a way to build an understanding of how digital and computational methods "make" architecture. Our instruction, in fact, stresses the impracticality of classical drawing, so as to foreground its humanistic role to build a deeper understanding of process and visualization that may be applicable to future generations of tools, whatever they may be. The curriculum is about the long game, not the next job. It challenges students to learn how to learn, not to find an answer.

Another component of the curriculum is digital video-making, which addresses two objectives. First, digital modes of capturing and editing clips reinforce the same protocol-computational lessons as digitally-made analytical point-based line drawings. Students manage complex variables numerically and intuitively, balancing the two sides of the brain, but also biasing each in different ways and at different times. Second, video is a form of cultural engagement that connects students to the contemporary world and

foreground the diversity of their perspectives. A primary goal of the curriculum is to provide a common foundation that leads to different types of work—work that is linked through logic more than appearance, allowing students to understand the breadth of possibility even within a strictly guided process. Video-making illuminates that possibility with particular clarity, but it is applicable to drawing as well. The rise of video-making in the discipline, in everything from presentations to performance analyses, lends this aspect of a curriculum an added benefit, as student build a literacy in time-based media. In addition to the works cited, Joan Ockman's *Architecture School: Three Centuries of Educating Architects in North America* informs this paper and presentation.

In the Shadow of the Doubt
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Teaching architecture is like pursuing a sphere that always has one side in the shadow of doubt. However, learning architecture is like pursuing the same sphere that always has a side in the light of doubt. Both the particular circumstances are characterized by: 1) pursuing something very difficult to achieve fully; 2) the value of the pursuit object, the sphere that here represents architecture but which, among many other things, also represents the infinite; 3) the doubt that affects teaching and also research. Cultivating the attitude to doubt both in teaching and in the profession of architecture does not want to push towards the sphere of uncertainty or controversial. This is not scepticism but a sort of methodological doubt. Doubt as a method of knowledge is not a novelty. In architecture, understood as a form of knowledge and not only as knowledge of the form, doubt can be a horizon to be explored both for those who teach and for those who learn. The architecture is very complex although it has been dismembered in a many teaching. In fact, for the relationships with the social, cultural, environmental, economic, territorial context, and so on, architecture needs a holistic and complex vision. Doubts, faced with so much complexity, are inevitable and perhaps also indispensable to be able to deal with one's own activity with awareness and responsibility. On the other hand, our time requires certainties disguised as competences and specializations. Contemporary society wants more and more super specialized individuals who cannot have doubt. If not, they could not be efficient. The school, in every degree including the university, is following this chimera. But at the expense of what? If it is true that the super specialists are able immediately to find work, what will happen to them when their expertise will no longer serve? And in our age, change is always faster. Will they be able to change their certainties (competences) with the same speed and re-enter the labour market? Or will they be discarded in favor of new expertise? What is essential today is the discard of tomorrow? We hope to be wrong, but we have some doubt. What to do to prevent this, hopefully remote, eventuality? Continue to pursue the labour market that chooses the specializations but, paradoxically, appreciate the versatility and flexibility? Or continue to cultivate doubt as a method of knowledge and therefore also of professional practice? What advantages can the choice of doubt as a method bring? And what disadvantages does it involve? Is perhaps still doubt the method to be pursued to try to understand the complexity of architecture rather than certainty? Doubt as a sign of curiosity. Doubt as a search for responsibility. Doubt as a search for new

solutions. Doubt as a investigation of tradition but also of innovation. Doubt to overcome our limits. Doubt as empty yet to be filled. Doubt as hope to overcome modern contraposition of science education versus aesthetic education. In these terms all the questions posed up to now would seem to be rhetorical. Or maybe not? The purpose of these reflections is to address the meaning of doubt in teaching. This paper reports the results of the method of doubt as an approach to teaching the architectural project. The results generated by the questions asked in response to the students' questions.

Timelines: Engaging with Critical Thinking through Visual Contextualization
Alice Vialard, Northumbria University

Criticism in architectural study and its visual bias
At a time when architectural theory is disappearing from the architectural curriculum, where knowledge is readily available via the internet or through online sources, it is essential to put more emphasis on critical thinking. Critical thinking is not so much about knowledge itself but knowing what to do with this knowledge. The aim of architectural history, theory and criticism course should be on teaching student how to build a critical framework that will enable them to engage with contemporary architecture with an independent mind. Having learnt to build a personal critical framework, students will then be able to reflect on their own design work and the work of others.

On another hand, students in architecture tend to think graphically. Lectures naturally lean towards visual slides - photographs, diagrams, drawings, technical details etc. Building on this architectural education's visual bias, the proposal has been to incorporate visual methods into the formation of this critical framework: the timeline. Visual timeline here is not used simply as mere illustration, but more actively as a method to analyse and compare precedents (Rapoport 1990), build new knowledge, and communicate ideas. The use of the timeline helps to 're-frame' the research question in anticipation of the writing of a critical essay about a building that students have selected themselves according to personal preferences. Instead of writing a first draft and a final version, the first draft is replaced by 3 components: a building analysis and a timeline including several lines of inquiries and finally an abstract posing the base of a critical intention.

Contextualising contemporary architecture
Many examples of how to engage with critical thinking have for basis the critics of art who look at the artefact by providing different visual thinking strategies. Panofsky (1955) establishes three levels of interpretations, including the intrinsic meaning of a work, and Baxandall (1985) stresses the importance of the intention. Both in their own way are asking to not only understand the meaning of the piece of art, but to look at the more general context in which the artefact emerges (such as innovation in a technique for example). When assessing architectural work, its contextualisation becomes the basis for critical thinking.

Within the teaching of a course "Contemporary Influences on Architecture", the generic aim has been to expose the students to different approaches to architecture that are currently used in professional practices. It presents the history and theories that lead to the production of current architecture, understanding what each embeds and aims at. But its main aim has been to encourage students in developing a critical approach to architecture and learn to think independently, to develop analytical and critical skills that will aid them in the formulation of judgments.

The traditional essay has been split into a formative and summative assessment to build upon the visual bias and to help in constructing a framework. The summative assignment is ultimately a critical illustrated essay that develops an argument as well as a methodology to support student hypotheses with evidence. By formulating their own self-chosen topic, learners gain a higher level of critically, demand and engagement with the broader context. Self-selection encourages students to take ownership of their own learning and career development. This assignment clearly integrates history and theory to studio work, making it more relevant by integrating visual thinking and communications.

The formative assessment provides an alternative to writing by consolidating traditional background research into a visual framework. It is split into three components serving as the basis for the summative essay.   1) the building analysis of their selected building forces the student to look in depth, to redraw, and to diagram the specific qualities of their choice. The focus of the analysis is established by the primary reason why they think that building contributes to the contemporary discourse. 2) the illustrated timeline is a mean to map several lines of inquiries such as cultural and contextual influences. It synthesises the traditional background research (historical, theoretical, precedent studies) into a single visual framework which allows new knowledge to be constructed, and finally   3) the short critical abstract formulates a research question based upon the findings of the 2 first components.

Timeline as synoptic summary
The first step, the building analysis, entices the student to look at the building in terms of primary or natural subject matter which is to depict the building from and elements. The second stage is to transpose the notion of iconography to iconology, by integrating the context in which the building emerges.   Multiple lines of inquiry are pursued to contextualise the building within for example: the evolution of similar types (precedents), the evolution of architectural style in general or within the work of the architect, the evolution of specific technologies, the evolution of the site, location or cultural context... The timeline is used to map these lines of inquiries. The process of mapping requires often a categorisation of the information into broader themes. Once the lines of inquiries are established, they provide the basis for selecting relevant precedents. The timeline starts to establish a comparative framework to situate the selected building within the larger context. It provides students with a mean to establish a framework for organizing and interpreting that knowledge.

Examples of timelines are presented below: Figure 1. George Bradford-Smith (2015) - Lloyds of London building by Richard Rogers. The building is contextualised in time (x axis), in height (y axis). Each metro line represents a line of inquiry: the work of Rogers, landmark, London's tallest buildings, process (prefabrication), skyscrapers (London's first, towers, range) and architectural movement (structural expressionism, neofuturism and Bowelism). The buildings located at the intersections of more than one lines are extracted and plotted on the lower line (silhouettes). The lines determine the contextual overlaps of all the precedents with the selected building and are investigated further. Figure 2. Connor Tulip 2016. The building studied, the Chapel of reconciliation, is both a memorial of the division of Berlin, and the replacement of an existing church. Within these 2 sets of precedents, memorial and adaptive reuse, the student establishes different mechanisms that relate memory and architecture. The mechanisms serve as a foundation for comparison.   Figure 3. Ingmars Uptnieks 2017.

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Educational Philosophy about the HUNCH IV

Friday, March 29, 2019
16:30-18:00

Patterned: Sensorial Material Effects and the Learning Machine
      Rana Abudayyeh, University of Tennessee-Knoxville

Patterns, murals, reliefs, and various types of surface articulations have long been an integral part of design. Attitudes towards surface are reflective of the larger climate of spatial production, gauging the necessity and commodity of agglomeration within spaces specifically, and the agency of liminal territories within architecture at large. Commonly deposited on surfaces within prized programs (such as churches, palaces, and mosques), patterns and their respective aggregations reference through their inscriptions deities and/or assert the influence of various authorities. They are also telling of traditions of making and craft -both analog and digital. Whether such formations assume anthropomorphic qualities, or are fashioned around pure geometry and repetition, the agency of surface articulation remains a present yet often contested area in design. The resilience of patterns and their resurgence in the digital age is a testament to their impact on our spatial experience. From primitive markings to the most complex formal plasticity of fabricated assemblages, topical material applications are intrinsic to asserting value and identity to the spatial volume. Heterotopias by nature, patterns alter and augment the space of occupation. They cater to a different formal metabolism characterized by a unique receptiveness to the users, thus, introducing a friction to interior and exterior territories. Now more than ever, the need for this friction between surfaces and their occupants is essential in an era ubiquitous with the flatness of virtual imagery and an overall contextual autonomy.

Under this premise, a collaboration between industry partners in tile manufacturing, a principal of a local school, and a motivated group of third year design students formed. Our goal was to deploy an interactive platform in which the aforementioned theoretical charges were not only tested, but also applied. Collectively, we engaged in a creative process that pursued new design opportunities involving pattern formation and spatial perception, as we questioned how diverse perceptual modalities generate new potentials for learning environments. While such alchemy of agents is not new in the field of design and its education, the desired objectives were. The outcomes were not geared toward a design-build proposal as commonly practiced in Architecture programs, instead, the aim was to achieve a think tank where reciprocal exchanges between the three parties are fostered. This collaboration served as a unique opportunity for mutual learning and promoted productive links between industry, academy, and community. The course began with a charrette focusing on the versioning of sensorial surfaces through pattern application and extrusion. This was achieved through coding a tile pattern formation and devising twelve subsequent iterations of it. The objective was to achieve complex material effects capable of demarking space and triggering experiential affects. Branko Kolarevic, in the book, Architecture in the Digital Age, Design, and Manufacturing, addresses the connection between effects and affects

saying, "There is a close relationship of materiality in architecture to the extended realm of effects and affects. Articulation of surface and formal effects can have a tremendous affect on the experiential veracity of architecture." It is rather easy to understand the spatial characteristics and experiences of three-dimensional spaces (volumes). By nature, these constructs engulf their occupants and evoke certain reactions while providing for basic needs. However, can two-dimensionality (surfaces) provoke similar or even more complex affects? Can surface articulation advance more integral performative agendas? With these inquiries in mind, we engaged in the study of innovative tile systems and their evolution into respective spatial strategies. The conceptual studies of this phase were augmented with visits to the tile manufacturing plant and consultations with material engineers. Further, we tested the tile modular in both its green and fired forms, employing the college's fabrication lab machinery. The integration of the students' skills, the industry expertise, and client input created an effective feedback loop that informed the process in its entirety.

As the first phase of the project engaged the investigation of the sensorial impact of pattern, textures and the resultant reading(s) of space, the second phase titled, [MicroSchool: reinventing the learning machine], aimed to actively employ these formations towards defining a new educational model for children with a spectrum of learning and/or physical disabilities. MicroSchools are an alternative educational model that calls for an intimate learning environment centered on small spaces that offer a range of stimuli and experiences to students. The tile pattern studies became the base for defining innovative environments that utilize a variety of spatial and material configurations while balancing spatial familiarity and novelty. To better understand the parameters of the program and needs of the students, the studio worked closely with the MicroSchool principal and students. As MicroSchools serve children of various ages, the internal functions of these settings required a mobility of interior components and a capacity to retune the space based on the psychological and physical needs of the occupants.

Addressing learning settings through the versioning of material effects proved productive; it reinforced the integral role surfaces, particularly interior surfaces, play in our built environments. Surfaces collect and reflect sounds, smells, and images of our engagements in space. They harness temperatures, provoke memories, and alter our perception of depth. Further, the textural qualities of surfaces facilitate and compel haptic exchanges between our everyday life and spaces in which this life occurs. They engender a comprehensive impact on the design process and the subsequent spatial experience and expression. Furthermore, the integration of reciprocal experience learning strategies enabled the students to work directly with tile engineers, facilitating material experimentation and the development of novel applications and tectonics. These were directly utilized to respond to the programmatic needs of the client. The speculative trajectories that the studio pursued were always substantiated through the active participation of the various project parties. An integration as such allowed the students to actively participate in the design process and gave them agency and insight into the often overlooked area of product development. Further, it enabled the students, the client, and industry partners to look with fresh eyes on the interactions that define

the role of the project stakeholders and paved the way for the advancement of new modes of engagement.

Exploring Spatial Qualities; Evaluating Movement as a Source for Spatial Knowledge

Robin Schaeverbeke, KU Leuven
Liselotte Vroman, KU Leuven

Within our paper we would like to critically assess a first run of our research-based Master Elective, named 'course x' [name masked for blind review]. The Elective was set up by both authors - architects - with a mutual interest in choreography and movement and its potential links to the field of architecture, design(ing) and design-driven learning environments.

The goal of the elective was to invite learners to participate in our research topic and organise a platform to explore and share new insights and experiences concerning the subject. Furthermore we intended to broaden the learners' conceptual understanding as well as raise their awareness to the embodiment of spatial experiences by introducing them into choreographic movement notations. Within our paper we would like to share and discuss the setup, process and first results of the afore mentioned elective course.

(ii) Architectural drawing vs. embodied experience
Conventional architectural drawings (plans, elevations, sections) mostly represent a fixed state of a designed space. The disciplinary focus on measurability seems to contradict our spatial experiences which involve all of our senses and are characterised by perceptual movement rather than frozen observation. As architect and historian preservationist James Marston Fitch (1965, p. 709) stated: "To be truly satisfactory, the building must meet all the body's requirements, for it is not just upon the eye but on the whole person that its impact falls". Cultural theorist and urbanist Paul Virilio (1994) observed a similar issue and turned to dance, in particular dance movement analysis as a source of qualitative approach to design(ing). In our elective we took these observations and critiques as a starting point to explore ways to conceive and map non-visual spatial experiences. By drawing attention towards sensory spatial aspects we intended to broaden the participants' vocabulary in conceiving, designing and representing architectural experiences rather than rigid matter.

(iii) Movement, Choreography, Notation in Design-Driven Drawing Processes
While music can rely on a conventional notation system to express pitch, rhythm, note length, harmony and so on, choreography never achieved consensus upon its preferred notation system. What is fascinating about choreographic notation is that the dimensionality of choreography surpasses that of music. First of all there is the moving body and the interaction between other individual bodies, secondly there is time and space wherein the bodies move and finally there is accompanying musical score with its own distinct dimensions. The conventional architectural notation system relies on the triad - plan, section, elevation extended with parallel and vanishing point perspectives to geometrically project architecture's three dimensions. While conventional system has

proven its worth, its geometric foundations persists to ignore the more or less ephemeral qualities which characterise embodied spatial experiences. During recent years this exclusion has increasingly become a point of critique [Pallasmaa (2005, 2009), Frascari (2011), Gibson (1979), Summers (2003)]. Acknowledging these critiques implies that architects and (drawing) instructors alike, should inquire a balance between convention, embodiment and experience in order to provide a fuller account of the architectural experiences.   If we accept that movement is a vital part of perception (Gibson, 1979) we asked ourselves whether people's movement can be used as a form of communication. Philosopher and former dancer Maxine Sheets-Johnstone (2011, p. 438) states: "Corporal concepts in each case derive from experience and in no way require language for their formulation.[...] If anything, language is post-kinetic. Fundamental spatio-temporal energetic concepts come from experiences of movement [...]" . As such we believe that the exploration of alternative marking and drawing techniques can be helpful to discover and expose new knowledge related to spatial qualities, as well as qualities related to physical experience. Furthermore we believe that capturing movement in relation to spatial experiences is a way to extend the concept of movement and by doing so we can come closer to revealing the space itself. In particular we are looking for forms of communication which are able to inform us about the embodied impact of architectural elements. We assume that by understanding the influence of specific spatial elements upon our experience of space, architects will be able to deploy spatial concepts more consciously. In addition, the experiential and conscious transcription of movement activates a cognitive activity which could indicate directions for design(ing).

(iv) Course Description
The elective consisted mainly of practical exercises, in which we inquired the tension between the embodied experience and the built environment. The course was built up in such a way that through the completion of exercises the students came to a kind of advanced insights on the research topic. By means of classroom reflection on interim results, the weekly exercises were adjusted to the emerging insights. Within this first run we mainly focused on notation systems and how these systems could be used as a potential design tool. The whole course ran over a period of ten weeks and was dived in two main blocks. In the first five weeks we focused on notation systems, while in the last five weeks we explored how to intervene in space and challenge the embodied experience of the people moving in it. Within the paper we will further elaborate on the different activities and output. As such we intend to critically reflect upon the framework and the kind of examples and precedents we provided to the participants with the aim of refining them.

(v) Evaluation
The participants produced a sketchbook, a set of drawings, a set of notational explorations, recording devices, an account of the spatial intervention and a submission for a collective presentation. This material will be used to evaluate both our ambition and goals of the elective as well as the hypotheses of our research.   To evaluate the progress and results of the elective and to examine to what extent these could contribute to a broader research, we inquire the generated output according to the

following ambitions: (1) Embodied Experience - (2)Movement -(3)Notation - (4) Research. For each ambition we discuss what kind of insights and knowledge were added to the predetermined goals. Ultimately these reflections and assessments will be used to explore - (5) possible directions to incorporate the research into architectural design activities.

(1) Which conceptual frameworks and what kind of activities were introduced to broaden the participants' awareness and understanding concerning the embodied spatial experiences? How can they be intensified?
(2) In what way did the activities - or output - emphasised a way of communicating through movement? Did the activities or output find ways to study/use/explore movement as a way of communication and if so did the participants find or explore novel ways of doing so?
(3) Based on te assumption that the exploration of alternative notation techniques is a way to discover and expose new knowledge related to spatial qualities, we wanted to identify how the elective's framework and generated output contributed to the proposed hypothesis. Did the activities and output enable the participants to discover 'new' knowledge? Did the participants discover ways of drawing that capture movement in relation to spatial experiences? Were they able to extend the concept of movement?
(4) Within this section we would like to reflect upon inviting participants (master students in architectural design) to collaborate in a research project. How to challenge them, when (and how) to steer them, what is the status of the participants' work vis a vis the research and, ultimately what is the added value of such an elective for the research as well as for the participants?
(5) We decided to shy away from conscious design activities - studying and transforming an actual context using the frameworks of the research - in favour of more or less artistic interventions. If capturing movement in relation to spatial experiences can be a way to extend the concept of space and even a way to get into contact with the space itself we should ask ourselves what kind of spaces - or spatial readings - the elective should open up. Departing from a reflection on the impact of the introduced material on the participants' personal design practice we want to explore how the cognitive activity of transcribing movement could indicate directions for design(ing).

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Design of Sound and Place in Urban Environments - Recent Studios
     Marie-Paule Macdonald, University of Waterloo

Urban and architectural public spaces cater to all of the human senses, while traditionally urban and architectural designers rely on visual displays to persuade the public of the qualities of new proposed public environments - built form and landscape. As it becomes more common to use a variety of media to depict and simulate projected urban spaces, designers and teachers of design look for ways to sensitize emerging designers to the full spectrum of sensations that inform potential users of a public space. In this paper the issues of the design of experience of visual and aural settings are brought together.

In order to address issues of sound and public space, the author uses examples from two architectural design studios that took place in 2016 and 2018, where undergraduate students composed their own programmes and projects to take into account the aural as well as visual qualities associated with their design projects. This process begins with a programming that designates performing and listening as interactions that constitute some of the major activities happening in the context of public built form and associated urban space, and continues with an exploration of the materialities of the projects. For example, preliminary field research locates and maps small centralized urban organizations, collectives and businesses working in relation to activities such as sound recording, radio and musical performance.

Drawing on a body of work of some thirty student projects, located for the most part in North America, several schemes are discussed in terms of their innovative involvement with acoustic qualities as prime components of spatial experience. This speculation ranges from reuse and repurposing of underused structures that populate central neighbourhoods of existing cities, to incorporating access to environments to house instruments of various kinds to be made available to users, to creating access, including features relevant to experience of sound, across infrastructures that would otherwise have remained obstacles to the pedestrian city. The projects make propositions that extend from fundamental questions addressing innovative approaches to maintaining well-being, to those involving proposed new institutes for the pursuit of advanced research into sound, noise, communication and music. Ultimately the proposals seek to evoke contemporary spaces of gathering, where individuals share common public space and join in furthering the experiences of inter-communicating in both new and traditional manners.

Drawing the Obvious, Seeing the Hidden: Learning with an Empathic Pencil
     Emily McGlohn, Auburn University

A Teacher's Hunch
Drawing is a way for the hand to help the mind comprehend what the eye sees but does not understand. Home is a concept that physically and ethologically presents itself through the experiences, additions, arrangements, repairs, furniture, memories, and

photographs of a homeowner. The individual defines home - the architect designs the house. Teaching architecture students this concept is challenging when socio-cultural differences exist between student and client. When students see what is beautiful about other ways of living, only then are they able to design an appropriate house for a client. Robert Lamb Hart, author of *A New Look at Humanism - in Architecture, Landscapes, and Urban Design*, writes that, humans judge buildings as they do other humans, based on physical character and appearance. Humans also, "take pleasure, too, in recognizing and relating a place to our personal values, calling into play the full range of abstractions that we use to position ourselves and each other in society - beliefs, styles, ideas, interests, status, or power."[1]

On that ground, humans will likely judge another person based on the style, condition, and size of the building in which they live. If a student misjudges a client's way of living, the most appropriate new house design cannot develop. Empathy, the ability for one to understand how someone else feels, is an important trait for an architecture student to learn. Placing one's self into another's position supports intuitive architectural solutions. Carefully and lovingly drawing a home builds empathy in students - utilizing their hands to open their minds.

This hunch is the inspiration for an assignment to introduce empathy into an otherwise could-be patronizing and judgmental activity - designing and building homes for individuals living below the national poverty line. Documented by this paper is a classically contemporary drawing exercise third-year architecture students completed as a way to understand what "home" means to their client.

Drawing on Empathy
In a 1994 exhibit entitled *House and Home: Sprits of the South*, Jock Reynolds curates work by three southern artists: Max Belcher, Beverley Buchanan, and William Christenberry. In the exhibition catalog, of the same name as the exhibit, Rebecca Walker writes,   ". . . ways of living and transforming space become precious rite of tradition. From the specific laying out of a room to the adding of a porch or garden, from the placing of a favorite item --of the deceased on his grave to the daily sweeping of the front yard; when these patterns are recognized, repeated, and revered, so are the makers and keepers of those patterns."[2]

The photographs, paintings, and sculptures of these artists celebrate a way of life instead of a structure by recording the evidence of the care and utility of simple buildings. An empathetic view of the people who lived in the buildings develops though a careful look. Walker goes on to describe this view,

> "There, at the sloping roof and uneven windows, is the unavoidable humanity of the handmade. There, in the economy of line and functionality of the space, is the premium on self-reliance and self-sufficiency. There, in the flowers in the front yard and the design on the pillars is the belief in the power of beauty to cultivate community. There, in the red carpet painted down the front steps is the cultural welcome, the belief that the guest is a royal visitor to be honored. There,

in the rooms added on over the years, the shoe wedged in to fill a wind-hole, is the tradition of flexibility and inventiveness . . ."[3]

William Christenberry's photography is architectural in nature. Orthographic view points speak of the life lived in the building; evidence of time and weathering highlight function and modification. Although worn, the buildings are proud of their usefulness. Understanding the life lived in the building creates a graceful picture of the occupant. Through the hand of an artist, empathy develops in the viewer.

Does the artist gain empathy as they work, or must they first posses empathy in order to convey empathy? This paper suggests that the artist (an architecture student) needs no prior cultural or personal knowledge of someone's life in his or her home to develop and convey empathy. It is possible - through drawing - to learn empathy.

The International Journal of Education & the Arts supports this assertion. Riddett-Moore describes how "aesthetic engagement can encourage empathy and caring" in art classrooms.[5] Recognizing there are different ways of life is an act of perception. With students, if the teacher approaches this perception with care and ethic, the students accept the alternative belief, becoming more tolerant and endeavoring to understand the other person.

"Aesthetics as a practice in caring is about being attune to relationships. Making big ideas the focus of art inquiry and creation invites students to explore their own lives as sources of wonder, places of discovery, and works of art. In this lesson, an awareness of others' physical presence invites students to explore a new definition of relationship and ultimately to imagine new relationships and ways of life."[6]

Through the careful documentation of everyday objects, materials, shadows, patches, and arrangements, students are able to critically, yet respectfully study their client without judgment or bias. Through drawing, empathy develops in the student because they have considered a new way of living and associated it with their own. As a result, the viewer is able to learn as much.

Classically Contemporary
Mrs. Zee (as she'll be called) lived in her trailer for 42 years. Although well taken care of, her trailer appeared to be old and substandard. As part of a design-build studio students built Mrs. Zee a new house in the months that followed the drawing assignment. Understanding her former home was crucial to honoring her way of living and to providing her with the most suitable new house design.

Drawing the obvious to see the hidden, students used classic methods of representation to study and understand contemporary socio-political issues surrounding poverty and affordable housing. They measured and photographed Mrs. Zee's trailer to draft orthographic elevations. Textures and shadows, classically rendered in pencil, depict material, passage of time, the resourcefulness of the client, and the important of everyday objects. A page of Arches hot-press watercolor paper provided a precious

surface to study proportion of the trailer and practice composition on the page. When drawn in this light, students are able to recognize and relate their own personal values to Mrs. Zee's way of life.

In this example, the classic modes of architectural education combine with contemporary issues facing our neighbors, and (ideally) result in empathetic designers ready for the varied socio-cultural circumstances they will face after graduation. Separating the classic and the contemporary is not always necessary; using the tools of both skill sets reinforce thoughtful, skilled, and prepared architects.

Through meticulous documentation of the obvious, students learned hidden things about Mrs. Zee. They were able to anticipate her needs in a new house and design modifications for her lifestyle. Students recognized similarities to their own routines and forged bonds with their new client through empathy.

Although the student renders the house to near photographic perfection, the choice of objects highlighted in each drawing tells a story a picture cannot. Compared to the actual photograph of her trailer (see fig. 4), the drawings convey a sense of humanity with which the viewer associates to his or her own experience. Everyone has a memory of sitting on a front porch with a family member. Everyone can identify with needing more storage. Everyone understands the burden of maintaining a property. When the drawing is precious to the student, the subject of the drawing becomes precious in turn. Mrs. Zee is beloved by the students and she adores them. Through drawing the obvious, new relationships were strengthened by seeing the hidden.

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Incubating HUNCHES about Pressing Issues into Academia IV

Friday, March 29, 2019
16:30-18:00

Save-As Detroit: Connecting Successful Real World and Academic Projects
Allegra Pitera, University of Detroit Mercy

Save vs. Save-As Detroit
As a product of the Detroit metro area, over time I have witnessed various attempts to 'save' the city—to 'fix' it, primarily with individual development projects. The city has been temporarily dazzled by some of the late-20th Century massive development projects intended to revive the city, such as John Portman's Renaissance Center downtown on the river. However, for many of these projects, the efforts were too heavy-handed and lacking sensitivity to the existing or potential quality of the urban streetscape. These efforts are rooted in the misguided belief that the capacity to improve the quality of life in the city does not lie with the citizens, organizations or institutions, residing within the city limits. My hunch in this research is that what has evolved over time has become less of an emphasis on saving Detroit as there is in Save-As Detroit: creating an overall strategy, a hybrid urban landscape, combining the best aspects of the what-is-with what could be, socio-politically or eco-culturally. What do I mean by Save-As Detroit? As we know when working digitally, one has the option of saving a version of their project without writing over a previous version: Save-As Detroit's history, the architecture and people are its foundation. Re-visioning and celebrating Detroit's foundation through a contemporary design lens, if Saved-As, can begin to merge modern urban planning strategies with the strengths of the existing foundation. In doing so, ultimately enhancing the quality of life for Detroiters and the surrounding communities. Save-As is therefore about restoring what is good-and building up from there.

In this scholarly presentation, I will address several real-world projects as well as 1st year architecture design studio projects that I have formulated that are in line with the contemporary Save-As Detroit agenda. While I am personally not a part of developing those real-world projects, their Save-As esprit reinforce the students' sense of being in their urban context. Heidegger's notion of the human reality as Being-in-the-World touches on the importance of connecting the architecture student to the world around them, through real-world projects. Building on that idea, connecting academic projects to these Save-As real world projects enhances the student's understanding of their responsibility as a future professional to become an agent of societal change, while at the same time using design to solve to real world problems-through the Save-As lens.

The Save-As Model
Currently in Detroit, there are many movements in the Save-As vein that are gaining momentum. From Lonely Planet's article August 2017: *Detroit, America's Most*

Ambitious Renovation Project "Those investing in the city are, for the most part, respecting that heritage by choosing to restore, not replace, gambling that the extra expense of a renovation will yield returns in character." Currently, much renovation focus is on businesses downtown. Aloft Hotels, a contemporary style boutique hotel company has renovated the historic 1915 David Whitney Building on Park Avenue which stood empty for two decades. Connecting activities with hotel guests the renewed, neo-classical hotel honors the historic architecture while celebrating the Detroit of today. Just down the road, Westin has restored the Book Cadillac, which was the world's tallest hotel when it was built in 1924.[1]

Save-As: Teaching Methodology
Similar to the business boom in the downtown area, some residential Detroit communities are also setting examples of the Save-As strategy. For example, The Fitzgerald Revitalization Project. The Fitzgerald residential neighborhood currently struggles with poverty and subsequent abandoned properties. Collaboratively with the City of Detroit, the Fitzgerald neighborhood's citizens developed a master plan. The goal is to transform their city-owned property from empty, unused spaces that currently detract from the neighborhood and residents' quality of life, to a series of connecting pocket parks that weave through the neighborhood. Attracting pedestrians and bikers, and located near a major freeway, these connecting parks have the potential to enhance not just the immediate neighborhood, but also the surrounding neighborhoods and businesses. As such, the Fitzgerald neighborhood has the potential to thrive as a community and contribute economically to both the Livernois business community and nearby neighborhoods.

The Fitzgerald Revitalization project has the potential for real Save As impact: building up and revitalizing existing resources and spaces in the community-the physical neighborhood-creating public spaces for its citizens. While the 'Save' option, such as a broad-sweeping redevelopment plan, would surely wipe out the less desirable vacant property-but concurrently destroy the existing strong, vibrant community foundation: the Detroiters who have lived in that neighborhood for generations and are the real stake-holders.

As a connection to the Fitzgerald Revitalization project, last winter the Design Studio II that I teach at the University of Detroit Mercy School of Architecture, the students' final project design was sited in the end-point pocket park at Livernois Avenue in the Fitzgerald community. This 1st year Architecture design project, to design a small community center and public park, ties in the real world Save-As Fitzgerald Revitalization project physically as well as conceptually. The physical placement of the academic project is directly in line with the connecting bike paths and parks. The Fitzgerald Revitalization project's intention is to revitalize a community that has struggled economically and socially; giving back to the proud citizens a dignity of usable and beautiful spaces, a reinforced foundation of community and a connection to the economically thriving Livernois Avenue.

Teaching Design 'Language'

Through building on existing Save-As real world projects, I intentionally create a fundamental academic framework: underscoring the significance of a multi-faceted but systematic language within the design process; as a visual as well as an intuitive and subjective communication system. Utilizing this broad definition of design-as-a-language, as a professor I am harnessing my hunch: that design projects aimed at creating a system of conceptual design connections are an ideal way to connect students to real-world projects. In architecture freshmen design studios, for example, a series of design process projects shifting between both 2D and 3D form, from studying the layers of a fabric quilt to form generation exercises to designing community space, are rooted in the study of form and space-but more importantly, to the understanding of being in the world. Beyond form-generating exercises, I am fascinated with developing academic process projects that are intuitive connections to real-world projects: I am working on the hunch that a 'design language' created by implementing a set of visual elements, assembled under the structural 'grammar' of design principles, will steer the student's intuitive strategies toward a connection to successful, real-world projects and through that, solidify their understanding of their being in the world through the physical, urban Save-As context.

The Hunch to Merge Academic with Real World projects
Merging architectural projects with real-world projects is based on a hunch: that real world projects are ideal vehicles to complement the spirit of academic projects. Real world projects that are responding to socio-politically or eco-culturally challenges, through the Save-As vein, add a layer of agency to the student's education, even at the 1st year level; emphasizing the importance of societal critique, observation and engagement. While my students are relatively 'green' freshmen and therefore not directly influencing these external, real-world urban revitalization projects such as the Fitzgerald Revitalization Project, the real-world projects become precedents for my academic projects, which in turn become connection vehicles: connecting students to their urban community and contemporary urban philosophies. Connections between student to student, and student to both the internal School community as well as the broader, external community, reinforce our being in the world through a social, educational and urban mission.

[1] accessed November 14, 2017: https://www.lonelyplanet.com/usa/great-lakes/detroit/travel-tips-and-articles/detroit-americas-most-ambitious-renovation-project/40625c8c-8a11-5710-a052-1479d27680c5

Lost Spaces
> Sally Stone, Manchester School of Architecture
> Tom Jefferies, Manchester School of Architecture
> Eamonn Canniffe, Manchester School of Architecture

This essay will discuss a post-graduate research-through-model-making project. The motivation for this assignment was the first fire that ravaged the historic Glasgow School of Art building (Charles Rennie Mackintosh c.1897-1909). Much of the building was saved, but certain significant elements of the interior were completely destroyed; this included the celebrated library. The School has proposed that the lost elements are to

be faithfully reconstructed, but this begs such questions as: is it possible or even responsible to reconstruct? Can the past be reinvented? What of the lost patina of time? How can something so important be reconstructed, maybe it would be better for it to become a legend?

> *"The prime function of memory is not to preserve the past but to adapt it so that as to enrich and manipulate the present. Far from simply holding on to previous experiences, memory helps us to understand them. Memories are not ready made reflections of the past, but eclectic, selective reconstructions based upon subsequent actions and perceptions and on ever-changing codes by which we delineate, symbolize and classify the world around us." (Lowenthal, 1985)*

The students studied nine different spaces, all of which had been lost: to time, to progress, to misfortune or to conflict. The careful and considered construction of models led to discussions about loss, interpretation and authenticity. The students were asked to develop a series of sketch models that investigated the particular qualities and characteristics of specific spaces or interiors that had been destroyed. These were not necessarily meant to represent reality, but to express an interpretation of it.

Model making can be an extremely effective method for the expression and communication of ideas. Models are provocative in that they are easy to understand, and thus make easily accessible the qualities that are inherent within them. The model allows for experimentation with scale, materials, and texture, and consequently present an expression of the three-dimensional tactile sensation is not present within drawings. Research Through Doing The aim of a Research Through Doing project within a school of architecture and design is to construct knowledge through the acquisition of insight and understanding. Design lies at the heart of the educational programme, and certainly within the design studio it is the central locus; thus doing within architectural and design education is the design process itself. At post-graduate level, the design process is inquisitive and analytical. Research is an activity signified by the gathering of insights about an object of research; the aim of this process is the collection of knowledge. Since design and research are inextricably linked, there is a direct relationship between knowledge production and the design process.

Design and scientific problem solving can be vastly different in that scientific understanding generally leads to a logical and concrete solution, while more artistically orientated problem solving can generally be compared with the deciphering of a riddle. Research into architecture and design is a hybrid subject located at the interface of connecting the fields of art, science and technology; an activity defined primarily by production, of physical or virtual products. Thus it can be argued that architecture is concerned with production. (Schurk, 2015)

The Model
Every constructed model serves a purpose, and so the person constructing the piece has to be acutely aware of what it is that they are intent upon communicating. Architecture is concerned with the physical articulation of space. The three-dimensional

experience of the space is made visible through the model. It allows the students to not only perceive the space but importantly to control it. The sketch model facilitates exploration and experimentation; it allows and encourages exploration, while a presentation quality model communicates the product of that analysis. Thus a model is a representation of reality, and it is just certain characteristics of the observed reality that are expressed.

This project investigated the memory of lost interior spaces. All creative actions are pieces of interpretation and the construction of every model is a creative decision about which aspect of reality to include or leave out. Even a full-size replica is not the original; it will always be a copy a simulacra, an image or representation. The form of every model is a process of interpretation and thus is open to possibilities. So the memory of the spaces allows for a great deal of interpretation.

The Project
There are no facts, only interpretations (Nietzsche 1901)

The aim of the project was to explore the significance of reconstruction within a model, and its implications for cultural memory. This project asked post-graduate students to created representations of architectural space; these had a direct connection with the original, but not necessarily direct connection with the form of the original. Within this process of recognition and discovery was a transition from theory to form. It was an intrinsically dynamic oscillating process of exchange and comparison. The idea was to yield new ideas, that is architectural models that inspired interpretations and in so doing, re-inscribe identity and rebuild the historical memory

These models were a close examination, or witness to the disruptions of the past. They were not reconstructions, but texts upon which the memory and anticipation of the Lost Space could be interpreted. The model may have had an intrinsic connection with the original space, in that it is a direct interpretation of it, however it serves a different purpose. Thus the space created was both the reality of the object and also a space for examining or exploring architectural form and space.

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The "How" is Next: Alternative Practices and Practicing Alternatively
    Romina Canna, IE University

Over the last seven years, the course of "Alternative Practices: The City" and the d-Lab -design Laboratory- at IE University Bachelor in Architecture have been vehicles to test the reach of academic production from its more conventional role as a tool for learning within the protected environment of the classroom towards a field engagement experience more inquisitive of reality and permeable to other agents.

Is it probably impossible to count how many articles, books, and presentations mention that people in the world live now, mostly, in cities. That milestone theorized extensively in the past with vivid images of futuristic scenarios, is now our present. Crossing this threshold has positioned cities into the center of disciplinary discussion. Conferences and many other fora for debate are focused, almost obsessively, on "what is next" for the city. Then, to restate once more where we are: for the first time in history, more than 50% of the world's population lives in cities. But, what cities?

Literature about the city has been bombarding us with a very extensive catalog of city types describing a current or future state of the art of our urban environments. Starting in the early 1990's with The Global City, which created an important shift in the way we looked at cities, we have learned about the Eco-city, the Sustainable City, the Smart City, the Participative City, and many others. The list is long and diverse as for what the city aims or claims to be, however, these types encompass a certain scale that ranges between mid-size of around 500,000 inhabitants to megalopolis of several million in order to live up to these labels and respond to their goals or expectations. Size, in population as well as institutional, and a certain generic condition seem to be fundamental qualities to be able to operate within these categorizations. But then, is that "the city"?

Dissecting the numbers, out of that 54% of celebrated urbanites, around 23% live in cities of less than 300.000 inhabitants. Thus, only 31% of our world population live in an urban environment capable of dealing with the complexities and resources needed to achieve the city types mentioned before. While literature, discussions and economic resources are focused on that 31%, a 23% struggles to define its present and its future, receiving little attention from the disciplinary field. Now, how are those cities made? Standardization and rationalization of resources, production modes, and conceptual frames were victorious "inventions" of the 20th century with an enormous impact on the development and growth of cities. However, this systematic approach that has brought endless benefits for humankind, sometimes works under the principle of exclusion. Everything that does not fit within its well lubricated structure falls into a limbo of uncertainty, and consequently, away from dominating theory and research. Small cities with scarce economic and technical resources, a changing productive and cultural profile, and involved in complex processes of population change, struggle to find a theoretical frame or a practical strategy capable of propelling its agenda. Decades ago, people in our discipline concluded that urban plans had a limited capacity as a tool for city-making. Nevertheless, sometimes, it is all small cities have for projecting their

future, or for addressing its more immediate present. The rusted tools of zoning and regulations are still capable of somehow organizing the physical urban environment, but cannot grasp efficiently some other phenomena that relate to human performance, behavior, or institutional organization. Without a backing theory, more comprehensive urban technical tools, or human resources to deal with a complex scenario, these cities move forward slowly and as "they can."

These observations are the foundation of the course of "Alternative Practices: The City". The course, within the last year of the Bachelor in Architecture, was implemented for offering our future graduates a perspective on the multiple possible paths on the career of an architect. In this context, the notion of alternative functioned almost as a synonym of diversity, of "otherness," opening possibilities on the most conventional role of an architect, especially in Spain where the model of the architect/designer of buildings still reigns supreme.

Much has been written about the idea of "Alternative Practices" as for referring to non-traditional ways of operation within the architectural field. In May 2009, in the volume 62, the JAE titled its issue #4 as "Alternative Architecture-Alternative Practices." The issue produced a critical catalogue around the meaning of alternative as opposed to the norm and the conventional, giving a broad perspective on an extended field of practice. But, bouncing back to our course, could "Alternative Practices: The City", as an environment for developing academic content, be alternative at all? And if yes, what was the norm or convention we were confronted with? Could we be alternative when our work lives in the protected environment of academic speculation? In an academic environment, how to define "alternative" different from "experimental" so not to fall into a pure intellectual exercise?   The course of "Alternative Practices: The City" focuses on a small urban settlement: Segovia, in Spain. The IE School of Architecture and Design, located in that small city of 53,000 inhabitants, named UNESCO world heritage in 1984. Like many small cities, the intricate formula of intense local and regional politics, small budgets and limited human resources challenges the capacity of the municipal structures to respond to pressing demands such as population loss, and the conflictive relation between tourism as an economic activity and the right to the city from its citizens. Back to some previous arguments, Segovia falls into this limbo of cities that do not fit within mainstream theory of "what is next" for our urban environments, struggling with a definition not even of its future, but a more complex present.

Operating in this context put us in an interesting position where the relevant question does not seem to be what city this is, as escapes to mainstream, theorized typologies, but rather on a more urgent question about how this city is made. If the idea of "what" seems to suggest an urge for a precise definition, the idea of "how" overpasses that limiting notion to focus on the more hopeful and direct capacity of the action. Then, and considering we are operating within an academic environment, the definition of alternative is not so much about opposing the norm, or confusing its meaning with experimentation, but rather a vehicle to re-contextualize the focus of our work and to explore its possibilities to operate beyond the benevolent classroom realm. Rather than focusing on offering an alternative project of city, we focused on the relationship

between tools of inquiry, fields of operation of our "doing", and the often-limiting boundaries between academic production and operative institutional structures within the city.

Our research and projects revealed on one side, the unsurprising lack of projects that could not be contemplated by the current tools in place for city-making, but more importantly, a void on the acting institutional structures to gather, link and translate into projects the complex portrait we were able to scrutinize and assemble. However, the format of an academic course has a limited reach and lifespan, and although the proposals uncovered a promising list of possibilities, it became soon clear that if we aimed to project school production outward, beyond the protected environment of the classroom, our approach to Alternative Practices needed to translate into a mode of practicing alternatively.

IE University labs were created with the premise of offering real work experience for our junior students within the umbrella of the different schools. The d-Lab -design laboratory- embraced this opportunity, creating a bridge between academic production and field engagement through an inter-institutional -academic and municipal— collaboration. For the last five years, the lab has supplied the City Hall with the skills, space, and expertise to elaborate projects that, otherwise, the city would not be able to produce due to the lack of human resources, administrative bureaucracy, and a limited institutional structure.   The definition of a laboratory as an environment for experimentation and production has been widely explored and implemented in architecture schools. Focusing on a range of interests from material research like C.A.S.T., to more socially engaged ones like the Ghost Architectural Laboratory among others, labs often act as extensions of the academic curriculum for the production of material, disciplinary, and cultural knowledge. In that sense, the d-Lab works in a similar fashion, while its intrinsic experimental capacity resides in acting as a liaison between the city's demands for projects beyond the conventional and available local tools of urbanism and the institutional structures able to support their production. Blending academic research with field work, the naiveté of school production with real demands and regulations, and the acquisition of knowledge with professional training, the d-Lab has become an alternative partner of the city, free from any political agenda.   This paper aims to explore some observations and results elaborated during these years of the alternative practice and the practicing alternatively of the academic institution.

The Contemporary Predicament: or How I Taught 'Contemporary' in Beirut
    Ghazal Abbasy-Asbagh, American University of Beirut

Inundated by the ever-expanding challenge of responding to the plethora of environmental and socioeconomic forces that shape our contemporary reality, architecture finds itself at once distinctly equipped to address these issues and obstructed by procedures and mechanisms that have long limited its capacity to play a central role in reshaping the built environment. Meanwhile, new tools and technologies are providing schools and practices alike with a continuous stream of challenges and

possibilities. Overwhelmed by the mandates of an inescapably complex context, the discipline of architecture seems to be stalled in a temporary, yet extended moment of amnesia, forgetful of much that has happened in its recent past, leaving considerable gaps in its pedagogy and practice.

As such, I taught 'Contemporary,' a core course that picked up where the last course in the history and theory sequence left off in 1945, as a compilation of lectures that covered everything ranging from the Holocaust to 'autonomy,' even held a Rhino workshop, skipped the digital paradigm, and delivered arguably the most boring lecture on New Monumentality and Critical Regionalism. The course set out from the hypothesis that we are the product of our sociocultural and disciplinary milieus and ventured to contextualize the project of architecture in the later part of the last century in respect to the broader context of the built environment. A number of texts, projects, and ideas were engaged in order to read and understand 'A'rchitecture, as a discipline engaged in building culture and producing knowledge, as it relates to the construction of isms, styles, and paradigms. The course did not purport to produce a linear intellectual history of contemporary architecture, but a series of histories within which many discourses and agendas may be contextualized.

Shortly after my arrival in Beirut, I was asked by my home institution to teach 'Contemporary, a core course that picked up where the last course in the history and theory sequence left off in 1945. Beirut, the city nestled between the Mediterranean and the mountains, the 'Paris of the Middle East', a city of many wars and many histories has a complex and sophisticated history. How does one teach the history of contemporary architecture, with its western centered narratives to an audience of students whose frame of reference is centered on a history intermeshed in decidedly diverse, but yet non-western centered narratives? To make matters more interesting, Beirut has a river of trash, millions of refugees, a civil war whose wounds are still fresh. Lebanon is currently 'between wars,' as a cab driver once told me. Lebanon did not have a president for 2 years. There is no public infrastructure, electricity is generated by diesel generators most of the time, tap water is salt water, yet the city glows with glamour.

My favorite definition of 'contemporary architecture,' had always been Lavin's: "...Rather, to become contemporary is a project and an ambition that requires the identification of an architectural terrain that activates the sensibility of being with time. If modernism was an architecture of restraint and inhibition, contemporaneity must be staged and must evoke a modality of exhibition." (Lavin, 2003)   Yet, the question in teaching the history of contemporary architecture in a context such as Beirut, foregrounded the necessity of positioning Architecture and its discourse, within a broader socio-cultural context, rendering the polemical immediately political, begging the question whether architecture, its practice and its discourse, is activism.

Lateral Shifts: Rethinking Real Estate through the Design-Based Studio

Sven Verbruggen, University of Antwerpen
Lara Schrijver, University of Antwerpen

In the 2017-18 Master thesis studio 'Reshaping the Commons', the central question was: what can architecture do? Is there a correlation between architecture and the formation of individual and collective habits? Currently, the social engagement of architecture is typically expressed through the provision of shared spaces or new collectives. In this studio, students explored ideas on the commons and on shared space, while also formulating a design brief that would help shape daily life. The design brief addressed an urgent issue, such as the ongoing conflicts between city planning policies of Antwerp and private landowners that result in unused residual spaces — an unresolved impasse despite the city's housing shortage and the need for densification. This proposal presents the work of three students who expanded on the ideas of collective housing, in the process shifting their focus to the underlying mechanisms of real estate. Together they presented a micro-, meso- and macro-scaled proposal, from individual units to an overall rethinking of land distribution mechanisms within Antwerp. Their individual work ranged from typological restructuring of dwellings to an urban-scale, share-based co-op. The proposal reflects on these projects as a particular variation on an open-ended, design-led research studio, in which the theoretical framework encourages students to collaborate and expand the scope of their work. In this case, the threesome divided research, working through material from urbanism to real estate management and from architecture to interior design. The text reflects on the triggers in the theory/design brief to collaboration and exploration.

Applying Academics' HUNCHES into Reality IV

Friday, March 29, 2019
16:30-18:00

A Disruptive Partnership
      John Scott Poole, University of Tennessee-Knoxville

This paper will present a unique partnership between a prominent architecture firm, a renowned national laboratory, and a rising university. It will describe challenges, opportunities, and successes in our work and implications for the future of architectural education.

In a nutshell, the (name of the program omitted for the anonymity) was a disruptor. It arrived suddenly, challenged the status quo, and fostered change at an uncomfortable pace. High-level design professionals, distinguished scientists, and innovative industries do not typically work side-by-side with faculty and students. The (name of the program omitted for the anonymity) provided that opportunity.

- It challenged the normalcy of a curriculum that placed too much focus on individual performance by stressing the importance of transdisciplinary team building;
- It urged us to rethink our isolation and become more interconnected;
- It called out our excessive emphasis on small scale projects and caused us to examine large complex systems;
- And, it questioned our reliance on traditional representational tools by accelerating the adoption of new computational design tools in a new educational environment--a 20,000 square-foot multi-purpose maker space that housed the (name of the program omitted for the anonymity) studio.

From the beginning, the joint partners recognized that each of us had an ongoing enterprise with embedded inertia. This was certainly the case for our college. Academics in architecture are notoriously resistant to change and can be ironically distanced from the professional world. Scientists in national laboratories are laser focused on making scientific breakthroughs but rarely include designers on their multidisciplinary teams as they work to translate basic science to commercial innovation. And architecture firms, who are in the business of making compelling buildings and shaping future cities, seldom include scientists or academics in their visioning process.

Clearly, our first challenge was to overcome our propensity to operate in isolation.

Getting out of a silo mentality is difficult. Especially if you believe the silo you are in is not only necessary, but also sufficient. For tenured professors in architecture and design, working in isolation has been the norm. Tenure is typically based on individual performance; adding new knowledge to the discipline over a relatively short amount of

time--usually five years. The knowledge generated by faculty is often realized in the form of books, book chapters, papers, conference presentations and, in artistic disciplines, creative work. Pure research is rare. Collaboration is rarer. And, if a faculty member does not engage in research and collaborate early in their career, these important skills are not likely to be developed later on.

But this is changing.
Some of the biggest successes in our college, and many colleges of architecture and design throughout the country, occur by faculty partnering with colleagues in their own college, across colleges, with other colleges of architecture and design, with industry, and with local and global stakeholders. That is precisely why we began the (name of the program omitted for the anonymity) with the motto:

What can we do together that we cannot do alone?
That simple question immediately put our work into perspective. It framed a type of project that would stretch our imagination, test our creative capacities, extend the reach of our resources. And demonstrate how practice can and should be connected to academia. We began ambitiously small. By beginning with a small-scale project, we could leverage many of our sophisticated capacities, pull the team together, help us understand our strengths and weaknesses, and engage the industry partners we would need going forward.

In the first year of the partnership, we completed our initial project, a 3D printed demonstration building that wirelessly reciprocates energy between a dwelling and a vehicle. In the process of design and construction more than 100 architects, engineers, scientists, students, and fabricators had been engaged in this award-winning project, proving the value, and in this case, the necessity of transdisciplinary teamwork.

The Impermanence of Buildings: Repair, Maintenance, and Decay
        Sabir Khan, Georgia Institute of Technology

How buildings age, weather, and decay -- and how we keep them going by cleaning, maintaining, and repairing them -- is rarely if ever addressed in design studios in schools of architecture. While professional practice cannot completely ignore the contingency and entropy of what architects design and build, architectural pedagogy, especially in North America, continues to privilege the building as idea, icon, and image -- as the designers imagined it -- unblemished by the depredations of time and of everyday use.

What if we were to acknowledge impermanence as an emblematic condition of buildings? Would this shift in perspectives bring to our attention issues we currently overlook? What if designers, both in practice as well as in school, considered what happens to building in and over time? Could exploring different kinds of time and duration (cycles of use, rates of material decay, stylistic currency, diurnal rhythms, to name just a few) enrich the design process as well as the design proposal that result?

Would this awareness prompt us to keep daily cleaning, regular maintenance, and periodic repair in mind as we select materials, develop details, and consider finishes? These two paragraphs, taken from a current architectural design studio brief that foregrounds daily cleaning, regular maintenance, and periodic repair, set out the charge for the students. By mining both the discipline as well as the profession to help frame and inform the charge, the studio makes explicit the potential of the architecture school design studio as a space where the teaching of practice and the practice of teaching could both problematize and enrich each other:

1. In this studio, the teaching of practice is not conceptualized primarily as "knowledge transfer" from the "real world" of practice (material performance specifications, building condition assessments, failure reports, facilities maintenance and operations schedules) -- information to be used instrumentally by students and instructors to bolster or critique studio projects. But rather as practices to unpack, learn from, and reflect upon. Students engage a variety of "practice" perspectives: building forensics, building assembly experts, detailing "gurus", contractors, and cleaning and maintenance crews from the campus facilities management department.

2. And the practice of teaching is not just a matter of "hunches" put into practice in the studio trenches as it were. But rather as hours of teaching experience distilled into pedagogical routines and scaffolding in order to enact -- and to enchant -- the material drawn from the range of building-related practices as well as the invisible labor, "unseen" yet all around us, that keeps the built world from falling apart. Spending time with a janitor on her morning rounds or inspecting the mortar failure on site is not what architecture students in the US expect to be part of their education. Yet these experiences startled and jolted into being a new awareness, all the stronger for being quite unexpected.

This studio brings on board issues that practice recognizes but does not have the time nor the inclination to give them sustained attention. In studio, however, we have the luxury to reflect and speculate how these issues may inform the way we use, build, design, and imagine buildings.

In studio we also have the time to familiarize ourselves with how these issues have been thought about and theorized within the discipline as well as addressed by particular practitioners. Philippe Boudon, Stewart Brand, Mohsen Mostafavi, David Leatherbarrow, Lacaton & Vassal, and a range of contemporary Flemish (advvt, OFFICE) and Catalan (Flores i Prats, Harquitectes) serve as interlocutors in the studio. As a teacher and a practitioner, my way to this studio was not straightforward. In fact, unsurprisingly perhaps, I found my way to thinking about decay, maintenance, and repair in architecture by first discovering the topics in other disciplines: the fast emerging and already established discourse on impermanence, aging, decay, and breakdown in engineering, science and technology studies (STS), computing, information science, anthropology, material culture studies, and art practice. The empirical specificity and theoretical precision of this work is compelling and for me, it offered a way forward beyond architecture's periodic (if not chronic) omphaloskepsis.

From the work of Kader Attia (art practice), Filip De Boeck (post-colonial cities), Steven Jackson (information science) and Marisa Cohn (technology studies) I gleaned insights and constructs for understanding how "impermanence may serve as a resource for the design, use, and maintenance of long-lived technological artifacts". Cohn's work offered a particularly rich framework to the studio for making sense of:

1. the differences -- epistemological, institutional -- between designing/developing and operating/maintaining;
2. the different speeds at which building components decay, obsolesce, weather, and breakdown;
3. the "long tail" of the products and buildings we make and use -- their multiple entanglements in time, in history, in technology, and in everyday life that continue long after the designers and engineers have left the scene.
An unexpected pleasure was seeing how much the practitioners that participated in the studio enjoyed these extra-disciplinary perspectives as well!

A Performative Threshold Between Teaching, Research and Practice. Atlas (…) as Scaffold

Darío Negueruela del Castillo, Swiss Federal Institute of Technology
Julien Lafontaine Carboni, Swiss Federal Institute of Technology
Aurélie Dupuis, Swiss Federal Institute of Technology
Dieter Dietz, Swiss Federal Institute of Technology

Hunches allow us to navigate in a trans-scalar world. Without them, teachers, researchers and practitioners would be left aimless. Hunches relate to the embodied and synthetic nature of the knowledge we produce, but also to its unfolding. Instead of denying importance of hunches or minimizing their impact, can we imagine to build a more apt framework for the kinds of encounters and negotiation they facilitate? Shall we do it within pre-existing academic and practical knowledge? Can we set up a pedagogical experience that sets a time and space to collectively integrate and share hunches, to experiment with them and to ultimately operationalize them in designerly or scientific manners?

In this paper, we introduce and discuss our experience with Atlas (...), an experimental studio currently running its second iteration. Neither a design studio nor a seminar, the Atlas sets up a framework for collaborative enquiry that further elaborates on them. The course gathers students from civil and environmental engineering together with students of architecture, and landscape architecture to work collaboratively for one semester. This experience is framed in our work on new visions for the trans-border Greater (city) as one of the selected teams aiming at tackling its current social, economic and environmental challenges and constructing a framework to think and discuss its growth in the next 35 years.

This interdisciplinary course addresses an alternative of perceiving and integrating the constitutive complexity of the territory and the intertwined trajectories of all its different agents. Departing from the situated experiences of the students within a given site of exploration, the course aims at carefully unfolding their many dimensions - the relational and performative aspects of involvement, bodily experience, environmental

context and objects, individual and collective cultural frames - allowing to experiment with them and to render them explicit. This is grounded on the conviction that an ability to affect is reciprocated by a capacity of being affected. The article is structured in the three following parts.

Part One: Sketch and Problematization of the Activities of the ATLAS
The course Atlas (...) is structured around a different kind of territorial survey, articulated through the use of iterative and thematic composition of boards. In these boards, participants reconstitute the territory of Greater (...) through the disposition and arrangement of different data and media (often images), thus re-enacting the territory through an operational analogy. This approach dwells on the method devised by Aby Warburg for the elaboration of his renown Atlas Mnemosyne[i], allowing for unveiling complex relationships among art works across different times and eras, and where the relative location of images with respect to the other images articulates relations of influence, similarity or variation according to several layers of analysis.

In this section, we will discuss the spatial framework of the Atlas (...) in a shared space of (...), together with a description of the material support and the role of the boards we use to discuss on. The ballet of images on the boards as well as the dance of the boards themselves help us introduce the method of enquiry and surveying performed by the students. In addition, we discuss how we designed the support to enhance their capacity to further develop narrative threads. The interaction with the pedagogical environment fosters an iterative dynamic marked by the return of students to the different locations. Participants perform new surveys that will inform a model of the territory, and so forth. The objective is to ultimately reduce the distance between the inside and the outside of the university, enhancing the agency of the model on the reality and empowering students to act upon the 'realities out there'. The context of the learning space is thereafter crucial to scaffold the student in her learning process.

Part Two: When the Scaffold Becomes an Environment
In this part, we discuss the different elements that contribute to the make the Atlas a cognitive scaffolding[ii], like the establishment of trust, or the capacity to be seamlessly incorporated or entrenched. This is contextualized in a body of theory postulating the role of external devices to enhance our cognitive and affective capacities[iii].

Here, one of the questions most relevant to the discussion on the relationship teaching/practice is how the articulation of these cognitive aids together with a welcoming and open structure where a constant collective renegotiation of the tools takes place, contributes to their "upgrade" to become what could be termed as an environment proper. This objective is supported by an emphasis on the combined importance of a situated approach and of embodied knowledge[iv]. This is put to practice through valorising the sensorial beyond the anecdote, and by giving place to the sentient body as a proper interface for environmental and social enquiry.   The consequences of this are twofold. On the one hand, there is the potentiality/gesturality/performativity of space, which can be read through synthetic patterns, rhythms or "appreciations or feelings" that cut across scales and types of

phenomena. On the other hand, the acknowledgement of a situated and embodied dimension of knowledge gives way to an intentional reading/writing of our surrounding reality. The bodily (sensorial, sentient and reflecting) presence of all actors alter the object of study, creating a play field where intentions, memory, physical constraints and imagination are conjugated.

Part Three: Model and Not Representation
Perhaps the most fertile problematic and engendering aspect of the Atlas is its agential dimension. The Atlas does not work by gathering personal, anecdotal fixed representation of the territory. On the contrary, the iterative method of intentionally arranging different data, media and testimonies implies the construction and crafting of an open and intersubjective model of the territory. This model is not given a priori, but built collectively through the enquiry and interaction with the territory and its actors. As such, it is characterized by the objective to help us understand the territory of the (...) Agglomeration but also to render us capable of acting upon it. In the article, we question this agentiality of the model in function of its optimal distance from reality, one that allows for both abstraction and re-articulation of cultural patterns, but one which should ideally remain anchored in the sensory realm of matter.

One of the main direct consequences of this method is that this re-instantiation allows for a bifurcation[v] on the trajectories followed by students. As such, the process bears a reflectivity that prevents a linearity of reproduction. The territory, with both its physical dimension and its relational social and cultural tissue, is not taken as given, but as an active matter of enquiry, to be reconstituted and altered in the process. This reconstitution necessarily depends on the person, her affinities, her context and her intentions.

The Atlas proposes thus instrument of both perception and action in the Simondonian sense, which allows for active and constant reconfiguration as knowledge becomes concrete and shapes both the understanding of the surrounding environment, and the identity of the agents involved[vi]. This condition of enabler differentiates the Atlas from other approaches to architectural education based on the transmission of 'tools' that can be 'applied' in order to find 'solutions' to spatial or environmental 'problems'.

Conclusion
While the ambitions for the elaboration of the theoretical, methodological and interactional dimensions of the course Atlas (...) were high enough, the actual running of the course provide us with additional challenges that are subject to discussion in our article. To what extent students embrace this way of doing and thinking? Can they leave behind preconceived ideas about both their discipline and the territory? Furthermore, how do we render the results of such a course fertile for further action?

With this article, alongside introducing and discussing our experience with Atlas(...), we additionally propose to revisit pervading barriers between the teaching environment, the professional reality and the outside worlds as well as between disciplines. In sum, Atlas

constitutes an open invitation to reflect on a different model of transdisciplinary interaction.

Finally, the discussion of these questions and their contextualization in the evidence provided by the results and testimonies from the past and current editions of the course is combined with a reflection on the importance of engagement/care. We discuss how the establishment of a performative and negotiated environment of enquiry necessarily implies and relies upon the fundamental dimension of engagement, and how this informs a professional and pedagogical agenda grounded on a strong ethical commitment with our shared common future.

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Synthesis: vertical projects and multi-disciplinary external collaborations in architectural education

Victoria Jolley, Manchester School of Architecture

At key points during the Manchester School of Architecture's academic year, students undertake intense 'vertical' projects as group work. During these, students from different levels of study across the School's undergraduate and postgraduate programmes unite to explore an architectural proposal or contemporary agenda in relation to a live project. Student learning, experience and debate are enhanced by the addition of external collaborators who may act as client or be an active team participant. This type of project has become an essential vehicle to progress the School's ambition to connect academia, the architectural profession and societal networks whilst offering a rich learning experience for the student. The School's practice can be aligned with Fung's 'connected curriculum' and Layden's vertical learning systems, as projects become 'sandboxes' that combine teaching and research and offer multiple opportunities to connect across many disciplines within and outside the School. Embedded into the curriculum and academic calendar, the whole or majority of the School adopts this approach for a fixed period of time and, due to large student numbers, its organisation, delivery and assessment become paramount to its success - it is usual for 450-800 students to be taking part at one time.

Referencing Schon, Roberts, Duball and Biggs, this paper will introduce and analyse the pedagogy and good teaching practice of this model through two of the School's established vertical projects. It will analyse students' reflective feedback to demonstrate

the effectiveness and value of this educational ecosystem, noting the impact on skills and knowledge acquisition. Areas of excellent student experience, diversity, problem-based learning, reflective practice and research-based teaching will be highlighted. The first case study, the School's 'Events' programme, is now in its twelfth year of delivery and annually unites approximately 450 students and 100 collaborators through 25 projects over a two-week period. Requiring the students to engage in outreach projects, Events' sits between academia and professional practice. Students from non-graduating years (year 1 and 2 undergraduate and year 5 Masters students) participate and this allows the opportunity to encounter different design-team experiences as a student progresses through their architectural education. It also repeatedly creates opportunities for students to foster new contacts, demonstrate their professionalism and their ability to manage co-created creative enterprises from conception to completion. In addition to final outputs, which can range from temporary pavilions to concept designs to exhibitions, Events uses digital and analogue media to encourage and capture student reflection throughout its organisation, running and assessment. Films produced by the groups can be shown as part of the paper presentation. Although student-led, the projects' briefs are often informed by studio atelier agendas or a member of staff's research. In doing so Events also becomes a means to test or rapidly progress a defined area of study or to repeatedly build on and redefine previous knowledge.

The second case study, the All School Project (ASP), involves the entire school responding in teams to a single brief created in collaboration with a small number of external partners. A one-week competition occurring at the beginning of the academic year, it rapidly produces 40-50 solutions to a single design or research question. Although based on pedagogic best practice identified in Events, it differs as it relies on intense peer-to-peer learning. The ASP is key to supporting student integration and induction by enabling connections across its diverse international student population, many of whom are studying on different routes such as long distance, part-time or hybrid programmes.

Key words: Peer learning, connected curriculums, vertical projects, reflection external collaborations, research linked teaching

How Do We Work? : Metacognition in Creative and Collaborative Practices

Byron Wolfe, Temple University
Seher Erdogan Ford, Temple University

Considering the context of growing emphasis on collaborative work in arts and design education, what it actually entails and how it works warrant a closer look. Institutions are motivated to help students launch multidisciplinary creative careers, while educators assign collaborative projects for students and engage in similar activities in their own practices. Given this momentum, are existing pedagogical models in creative disciplines designed appropriately to foster healthy collaborations? Moreover, is there sufficient common understanding or language for what might constitute best practices for initiating and maintaining sustainable collaborations?

Much of the literature on collaborative processes that begins to address these questions comes from long-established scholarship on education theory, more recent applied research within social psychology, and a large body of work from the business sector aimed at popular audiences. Starting with the perspective that all education is inherently collaborative, social anthropologist Tim Ingold builds upon the education theorist John Dewey's canonical ideas and advocates for a model that cultivates difference rather than "training" sameness.[i] In this pedagogical model, the mode of operation is not one in which the educators deliver a pre-established curriculum but rather commune with students in a partnership. Exactly how that might work is addressed in the research by psychologists Sawyer and DeZutter on collective creative practices.[ii] Their study identifies the breadth of activities groups engage in, ranging from highly ritualized and structured to unscripted and interactional modes. The authors' argument puts forth a provocative idea: the collaborative mode is not a direct outcome of carefully calibrated and scripted engagements, but an emergent property of social encounters in which participants' interactions are contingent upon moment-to-moment dynamics. In short, creative collaborations cannot be fully planned in advance, but the initial variables and conditions framing them can be thoughtfully prepared. In another study focusing on motivation among people working in groups, psychologists Carr and Walton examine the subtle characteristics differentiating collaborations from generic group work.[iii] Their findings suggest that the sense of working together collaboratively on a project is substantially different from individuals working alongside each other or even a group working on the same project. Collaborators must trust in each other's commitment to the joint endeavor while maintaining a certain level of autonomy. These insights from multiple disciplinary viewpoints all underline the necessity of paying attention to the process of how collaborators engage with each other and the work. Nevertheless, within the creative disciplines, a purposeful consideration of the working process remains largely overlooked. Emphasis remains primarily focused on the tangible outcomes of a project and the success of collaborations register only in terms of criteria associated with these outcomes. As a result, much of the working process is intuited but not explicitly discussed or formally assessed.

As an alternative, we propose a revised approach, where students and educators collectively pause the workflow that typically privileges "what is next?" and pay deliberate attention to "how do we work?" This reorientation offers opportunities to view the creative process not merely in service of the final outcome but in its own terms. The specific discussion centers on a graduate level course entitled Collaboration and Creativity, which the authors of this paper co-developed and taught within a school of art and architecture. The three times the course was offered, it drew interest from students across a large array of programs including architecture, painting, photography, printmaking, ceramics, glass, and film. By design, the course material and discussions bring the process of collaboration to the foreground and make explicit many aspects of the work that are otherwise not typically examined overtly. Themes such as the creative process, collaboration as amplification, modes of communication, the self and other, and physical space and time as resources inform class discussions on the process of actively building and maintaining healthy collaborations in terms of the structure of class

meetings, critiques, evaluations, field and archival research, and studio production. Based on our observations, the oral and written feedback from the students over the course of three semesters, and drawing from the existing literature, we propose a model for monitoring and assessing the process of creative collaboration. Rather than the more typical sequence of prompt-activity-outcome found in most collaborative studio work, we propose the revised cycle of prompt-activity-reflection. The reflection phase comprises strategies used to probe the question of how we work from various angles, and includes analysis of group dynamics and composition as well as a regard for the individuals' experience within the collective. Specifically, we discuss four types of probes facilitating reflection: visual analysis of group activity, self-evaluation, communication cards, and personality studies. Diagrams visually mapping the group dynamic illustrate patterns of engagement during in-class activities. Secondly, self-evaluations completed periodically at certain benchmarks throughout the semester help individuals reflect on the collective process and their roles within the group. Initially an individual task, communication cards are mental notes that each participant contributes to initiate and organize collective thought processes. Lastly, assessment of personality traits codifies the composition of the collaborators and their relationship to work, facilitating transparent conversations about who they are. Results from these probes suggest that participants in healthy collaborations exercise (overtly and unconsciously) certain group norms, and collectively exhibit specific qualities which we have identified as resilience, improvisation, and intentionality. By resilience, we mean an ability to regard "failure" as something to navigate around and a possibility for raising awareness for future projects posing new circumstances. Collaborators pay just as much attention to how they are working as what the work produces. The resultant awareness of the process allows a broader perspective that helps participants navigate obstacles and variables. Secondly, improvisation is essential for both educators and students. Rooted in a larger outlook or even a philosophy, collaborations build upon an acceptance that things are not necessarily going to unfold as expected and therefore parties have to be able to respond accordingly in the moment. From an educator's perspective, this attitude also recalibrates curricular planning as a balance of unstructured and structured time. Dealing with the uncertainties of teaching without the scaffolding of a rigid curriculum and improvising based on the rhythms of the emergent collaboration among students require a certain degree of proficiency and confidence within the classroom. Similarly, from the students' perspective, casting aside the fear of failure or the negative consequences of not meeting a predefined goal produces the confidence to improvise, ultimately accumulating experience that can be applied toward circumstances in the future. Lastly, intentionality has to be an attitude held collectively by all collaborators and requires at least two scales of attention: on one level to the details of the creative project, and on another level to the overarching intentions of the collaboration as distinct from the project. A shared sense of purpose toward the collaboration, independent of the outcome, changes the individuals' behaviors and attitudes toward the creative project.

In this paper, we propose a deliberate and methodical contemplation of creative collaborations as being distinct from their outcome and involving periodic phases of collective and individual reflection. This shift in attention facilitates a metacognitive

vantage point, from which several dichotomies commonplace to design thinking--namely criticality and creativity, product and process, rational and emotional reasoning, information and motivation, and singular and relational thinking--can be revisited. In turn, the active engagement in collaborations functions as an experiment challenging the normative modes of teaching and learning. Teaching collaboration across creative disciplines requires re-education, on the part of the students as well as the teachers.

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The HUNCH and Architectural Pedagogies V

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

"Angelus Novus" -- On the Utility of Applied History of Contemporary Architecture in Architectural Design

Elena Rocchi, Arizona State University

A Hunch. To explore the present and future role of teaching practices concerning broader pedagogical contexts, one must draw a map for the journey, without forgetting — before leaving — to include the history of their past. The map might have the resemblance of Paul Klee's Angelus Novus and its description, the words Walter Benjamin wrote in 1940 in his text "On the Concept of History:" an Angel "with a face turned toward the past, wreckage at his feet, blown toward the future by a storm that caught in his wings." Radicantcy. The future is unknown, but as the Angel's wings, the present is visible, caught in the storm of progress, filled with "radicant" identities with roots in motion (Bourriaud, 2009: 51) over a globalized context. In a new relational context, architects move as part of the contemporary culture's dominant figures: immigrants, tourists, and wanderers, with "nomadism" as the category emerging — the paradigm architecture education should consider as the essential part of students identity. How do we teach architecture in motion and the transportability of ideas? The students of any academic institution intros moment have in common not where they come from, but where they are moving to. They are always somewhere else home; they are "exotic" rather than "national," resembling "those plants that do not depend on a single root for their growth but advance in all directions on whatever surfaces present themselves." (N. Bourriaud, The Radicant 2009: 51). Can we teach architecture students taking into account the awareness on their radicantcy? The Course. A first intuition developed three years ago into "Applied History of Contemporary Architecture" Course. On the one hand, the main course goal is to have students getting familiar not only to study Contemporary Architecture but to observe in detail a generation of architects which cultural identity and architecture rooted in movement; on the other, to show how changes imposed by globalization on local and traditional cultures lead toward their new professional opportunities. As an example, during the course, students observe the Dutchness of architecture as the manifestation of the importance of rootedness in an "aesthetics of diversity" developed in a journey (radicantcy.) Course Goals and Learning Outcomes. The experimental course focuses on two main goals: 1) through a series of lectures, students understand the historical evolution and the generative elements of contemporary architecture in connection with the specific cultural, social, political, economic, and technical forces. They are exposed to trends and the works of architects as to a series of critical moments in their careers in the time and space they were living in. 2) through a series of graphics assignments, they formulate and implement design thinking in studying one architect and one of his work. The second goal allows students the opportunity to develop and implement their model of the design thinking process. In this way, students develop an "active" understanding and appreciation for the history of architecture connected with structure, systems,

theory, and design thinking. Upon successful completion of the course, students acquire the following learning outcomes: a) a general awareness and an understanding of significant historical developments in architecture; b) a more specific knowledge of architecture discipline's connection with the areas of communication, education, material culture, politics, and society; c) an acquisition of basic facts of recent architectural history students can integrate into their studio design, their professional future, their internship in an office abroad. Bibliography Bourriaud, Nicolas, The Radicant (New York: Lukas & Stermberg, 2009) Benjamin, Walter, "On the Concept of History" (Über den Begriff der Geschichte), in Selected Writings, Volume 4: 1938 - 1940, ed. Howard Eiland and Michael W. Jennings (Cambridge, MA: Belknap Press, 2003), pp. 389 - 400.

Con->Text: Text as Context - Reading and Writing as a Pedagogical Tool Exploring Place

Julia Kirton, Doña Ana Community College
Lamaia Vaughn, Doña Ana Community College

Design instructors are responsible for providing beginning students with a method to engage in the design process. Every design student needs a curriculum program guided by a step-by-step progression that builds their respect for analysis, design methodology, rigor and self-confidence. In this studio, "reading and writing to think" are the tools of exploration, employed as a pedagogical strategy where students build a strong design connection between literature and context and vice versa. This process allows students to explore themselves and their inner thoughts resulting in the unexpected, with the results of this study measured by compiling data gathered through surveillance of instructional events, instructor discussions, and assessment of content knowledge; with the objective to show that "reading and writing to think" is crucial for the success of the first-year architecture student.

The Imaginative Space of Narrative

Tracy Moir-McClean, University of Tennessee-Knoxville

Narrative imagination creates a space of learning where contemporary and historic knowledge of place merge. This presentation illustrates how an evocative curation of archival materials and visual prompts can provoke students to imaginatively construct narratives that lead to active visualization of the processes humans use to construct, inhabit and create comfort in place. In this illustration, Jefferson's archives at University of Virginia and Monticello, as well as other sources on 19th and 21st century society, construction and technologies support student imagination of social-cultural and physical changes of Jefferson's Academical Village on The Lawn. When narrative is used to imagine how constructed space performs as place, it becomes easier for students to intelligently work across time to compare and contrast, question, critique, synthesize and inter-edit historic and contemporary narratives. In addition, imagining construction, lighting and thermal performance as narratives helps students to understand and visualize these processes. The concept of narrative imagination is

informed by traditional narrative as Marie-Laure Ryan defines it her 2005 article, *Narrative and the Split Condition of Digital Textuality:* "(The traditionalist school) conceives narrative as an invariant core of meaning, a core that distinguishes narrative from other types of discourse, and gives it a transcultural, transhistorical, and transmedial identity."

In the UVA example, the narratives of students and masters; men and women, free, indentured and slave -and the work each does to create order, comfort and structure are imagined. For example, imagine a small woman in a corseted dress struggling to adjust the lower sash of a double-sash in the master's apartment as it starts to rain (image 2). Then, wonder why the carpenter designed and constructed a complicated heavy window where both upper and lower sashs move. Wonder why the top sash overlaps the bottom to the exterior. Wonder why each sash is attached to ropes and counterweights concealed behind mouldings. Connected by a narrative, each element of the window design begin to make sense. If the woman is hot, she is able to adjust upper and lower mobile sashes independently to maximize the thermal airflows across the room. If the upper sash overlaps the lower sash to cover the gap between sashes, rain cannot enter that gap and drip on her dress or the table as she adjusts the window. Pulleys and counter-weights help the small woman to lift and lower the heavy sash easily. Finally, when the rope frays or falls off the pulley, a carpenter can pry off the molding and replace the rope. This example illustrates the difference between memorizing a correct configuration of lines to be drawn to represent a double-sash window, and using narrative to understand the design of a double-sash window.

Three exercises of narrative imagination are discussed in this presentation: the first concerns passive energy strategies as a means to create comfort; the second concerns the interplay between gender/race and social hierarchies and habits of using space; and the third how aspects of a formal design grammar encode lessons of environmental comfort and social roles. It is important to note that while some narratives encourage students to imagine historical time, others encourage students to imagine analogous contemporary experiences. Students are also free to employ contemporary skills and tools to visualize space. Rhino, Photoshop, 3-D printers, gall ink, geometric construction, laser-cutters, gridded paper, and watercolor are equal in narrative space.

Key moments envisioned to support these exercises include: Jefferson's first conception of an academical village and the letter he wrote describing it. Jefferson studying Palladian geometry and sketching preliminary designs for pavilions and arcades on gridded paper. The various processes and stages of construction on The Lawn. The year that professors move into the pavilions, students into the rooms, and slaves into the basements or quarters down the hill. The everyday cycle of teaching, cooking and living in hot humid summers, torrential spring rains, deep red mud, dark nights and bitter cold winter wind. Smoldering fires, iron cookpots and basement doors shut tight to keep the heat and smoke of cooking out of the upper levels. And finally, contemporary moments when a genderless faculty member and group of students meet for their seminar class sometimes in web-space and sometimes physically on the Lawn. Conclusions. Multiple narratives exist unvoiced within the processes of design and

successive inhabitations of place. Several lessons result from giving voice and form to the narratives of architectural place. First,narrative inquiries are an effective means to understand design, construction and inhabitation of place. Second,the accuracy of imagination and working knowledge of the processes and practices of construction and craft improves when supported by research. Third,inquiry into moments when the sources do not match leads to speculation on the reasons behind discrepancies. Deeper research prompted by inquiry leads to critical assessment of the strengths and weaknesses of each variation. Fourth,imagining narratives of gender/race and social hierarchies, helps students understand the interplay between configuration of space and social-cultural habits. Fifth,studying place over time helps students learn that social-cultural and physical order is rarely static, and even familiar places and uses embody traces of unfamiliar practices. Sixth,inhabitants often reimagine and revise configuration and use of their spaces. Lastly,formal design conventions often encode practices of environmental comfort, social values and roles. For example, small rooms and aligned windows and doors of Jefferson's variant on Palladian order encode an a spatial configuration that can be enclosed for fireplace heating (or privacy) or opened up for summer ventilation. Sectional organization of service courts in the basements, classroom on the academic lawn, and private apartments balconies above encode social, gender and racial realms that privileged the academic master and student (see image 4). Jefferson assigns the privileged location at the head of The Lawn to a library, The Rotunda. Filled with books that he himself selects, purchases and bequeaths to his university, this decision reflects the high value that Jefferson places on reason and knowledge. In closing, content absorbed from surrounding culture and society influences individual actions and social roles. It is hoped that in line with Jefferson's ambitions for his academical village, that critical practice of narrative imagination might develop the power and ambition of our students to create, critique, and transform design practice, architectural place, and society.

Disorienting Dilemma
     Scott Singeisen, Savannah College of Art and Design

Introduction
In *Educating the Reflective Practitioner*, Prof. Donald Schön suggests that artistry is necessary for the solution of problems in professional practice that occupy the indeterminate zones of uncertainty, uniqueness, and conflict. The two traditional approaches to the teaching of artistry, however, are problematic. The first, its elimination from a curriculum based on technical rationality, is predicated on the belief that artistry is mystical and essentially unteachable. The second, its reduction to a set of procedures, has proven not to work with indeterminate phenomena that are inherently unmanageable. Schön proposes a third strategy: reflection in action, based on his observations that considerable tacit knowledge is already built into practice. By entering the condition of action and reflecting on what has been done, one can resolve "indeterminate" problems in situ by doing. (Schön, 1987). The greatest need exists at the intersection of architectural process and design studio pedagogy. The most used assignment for 'reflecting on what has been done' in the architecture discipline is the

case study. However, how we engage the case study has dramatically shifted in the age of the internet. Well documented, the internet changed all consumption of history and precedent. In 1998 there were 3.5 million internet web searches; now there are 4.7 trillion search queries every day. The brain has been retrained in the internet age of research. Design analysis and research as the process of a quick internet search, rather than an in-depth investigation and reflection, permits the information to be stored in our pre-frontal cortex, that area of the brain for short term memory and quick decision making. Studies of brain activity of individuals conducting an internet search witness twice as much activity in this area of the brain - essentially telling us that our brains 'know' that we don't need to remember what we're about to find, because our brain 'understands' that its always available later. We have trained our brains to prepare for skimming, instead of learning. What used to be an act of meaning memorization has transitioned into image memorization. But very little literature exists discussing the benefits - and perils - of the use of the internet in architecture education. No one would argue or dispute the necessity of the internet in architecture and design education; it is now essential for many aspects of research and teaching. However, faculty continue to promulgate a pedagogical approach that may not consider how the internet has changed the context and means of student research, or the pedagogy has become an extension of the teaching faculty's own process, producing 'offspring' who can emulate the professor's process in class, but who cannot identify their own personal artistry or agenda later. By adjusting pedagogical approaches to consider the role of the internet, faculty demonstrate how students can better utilize the resource to further their design ideas and discover their own procedural learning in the creation of the design. It is the position of this paper that the identification and use of analogous architectural research elements provide a framework for the examination of existing - and development of new - designs in architectural education, providing students a methodology of 'reflection in action' on their own contextual position relative to the history of architecture. Additionally, this paper explains the use of precedent and case study investigations, not in support of typological historicism, but rather as a means of distillation and refinement.

Context
The pedagogy of the past directly influences the pedagogy of new and emerging faculty. The most relied upon approach is that which faculty members know works well, institutional examples, or those means by which faculty were taught. One core expectation as a result of post-modern education is the requirement of research and the incorporation of case studies and precedent examples into the process and product of student work. "Most students' (an incredible 93 percent) first instinct when confronted with a research problem is to turn to Google or Bing to get information rather than going to the library, and despite the best efforts of faculty to discourage its use, Wikipedia is the research resource that is used most often." (Hymas, 2003). If the propensity is for students to gravitate to the internet for research, what is the unintended consequence of the internet on pedagogy and research? One reason so many students fail to achieve complex learning goals may be that they rely too heavily on others' opinions about what to believe, and what they have been provided as examples in internet search term queries. The meaning-making capacity of self-authorship provides a basis from which to understand and learn from one's experiences; without this, students are at a loss to

know how to make intentional choices about what to believe, use, or learn from (Baxter Magolda and King, 2012).

The term meaning-making has been used in constructivist educational psychology to refer to the personal epistemology that persons create to help them to make sense of the influences, relationships and sources of knowledge in their world (Postman and Weingartner, 1969). According to the transformative learning theory of sociologist and educator Jack Mezirow, adults interpret the meaning of their experiences through a lens of deeply held assumptions (Mezirow, 2009). When they experience something that contradicts or challenges their way of negotiating the world, they have to go through the transformative process of evaluating their assumptions and processes of making meaning. Mezirow called these experiences that force individuals to engage in this critical self-reflection "disorienting dilemmas".

Proposition
Disorienting dilemmas force students to engage the material in a manner that challenges their preconceived notions and forces them to come to terms with their own beliefs, forged through the process of discovery. The pedagogical approach explained in this paper demonstrates the use of 'Five Analogous Elements' that form the basis of the reflective studio assignment. Students are assigned a critical research agenda unpacking the analogous elements identified as: Site/ Environment; Client/ Program; Material/ Construction/ Structure; History/ Theory/ Criticism; and Design Fundamentals. These five elements are analogous since they form a cognitive process of transferring information and/or meaning from one element to another, elevating the design work with each subsequent cycle of reflection. The elements are rhizomatic in the Deleuzian sense; after multiple uses and iterations, the network will no longer have a clear starting point, and all five elements coalesce.

By further articulating the definition and use of the 'Five Analogous Elements', this paper will identify and demonstrate the role of these critique categories as tools for examination of the built environment and as tools in the design process. The paper will document through the use of student assignments, process work, and examples of final projects, how to use the analogous elements to empower design students to take control and self-author their own design agenda. This approach teaches the student of architecture to reflect and ask the critical reflective questions necessary to understand their own preferences within the larger context of architectural success and positions their preferences for design approach and theory within the larger context of successful design. (I use the term context here to mean the parts of the discourse, not in the sense of the physical or environmental surroundings.)

Throughout, I have avoided the mention of the immeasurable in design: aesthetics and poetry. The five analogous elements in no way solve architectural design as an algorithm; exercising the five analogous elements is no guarantor of successful architecture. As an experimental field, architectural success is naturally subjective. However, subjective opinions are valid aesthetically. The continuation of research assignments in a procedural manner without reflection in action is a pedagogical

problem passed down through generations of faculty, furthering a lineage within the academy based on pre-internet approaches to research.

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The HUNCH and Architectural Pedagogies VI

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

Augmentations of the Real: A Critical Interrogation of the Relationship between the Actual, the Virtual and the Real
      Matias del Campo, University of Michigan
      Sandra Manninger, University of Michigan

The workshop Augmentations of the Real presents itself as an occasion to critically interrogate the opportunities that Augmented Reality present for the discipline of architecture. The problem was illuminated from different angles, reaching from aspects of the augmentation of spatial experiences through articulation and ornamentation, to aspects of AR as an aid in advanced construction methodologies. Special attention was given to the fact that these techniques seamlessly fuse aspects of symbolic culture with considerations of materialism. Augmented Reality per se is defined by the application of symbolic gestures as interface between the material and the symbolic realm of computational environments. In a sense, Augmented Reality applications (fig.2) propose a synthetic ecology that is primarily defined by their inherent properties, such as simulation, enhancement and intelligence gathering, overlapping two levels of information, which operate between physical environments, and computationally driven information.

Augmentations of the Real is profoundly embedded in speculative territories. Moments of uncertainty collide with aspects of precision and control. Individual sensibilities are expressed in the individual projects, albeit riffing on the morphologies of articulated aesthetics such as the formal vocabularies of Baroque and Rococo (fig.3). The result is not an imitation of the former but rather a contemporary interpretation. The foundation can be discerned in the possibility to overlap various experience levels, which allows mining for potentialities in contemporary ornamentations. In this extent, Augmentations of the Real can be considered part of the discussion on PostDigital discourse in Architecture. An era in which computational tools are part of normal reality and other aspects of Digital Design are positioned center stage. Not the toolsets become the main actors, but the cultural agency produced by the toolsets.

For this to be explored a testbed is necessary.
The testbed for the examinations executed in Augmentations of the Real was found in the archetype of the column. As much as the column is a technical object it is simultaneously a mean of cultural expression, able to inform in an instant about the period of its construction. Ornamented columns have a long tradition as freestanding stela, specifically designed as memento, marker and memorial. The application of AR is able to extend the narrative qualities of the archetype of the column.   The combination between one real concrete column, three ornamented columns and eighteen virtual columns produce a forest of columns, a weird hypostyle hall, oscillating between the actual, the real and the virtual.

The Application of AR in Robot-Human Fabrication
In the previous section the authors described how Augmented Reality was utilized as a method of representation within the exhibition setting of .... in July 2018. The application of AR with the use of conveniently available means, such as Tablets and Smartphones, opens up opportunities to create a spatial environment saturated by a multiplicious level of sensorial impulses or stimuli. This was only one part of the application of Augmented Reality (AR) in the context of the DigitalFutures exhibition. Augmented Reality describes a method in which the environment is still perceivable but is overlaid with 3D information, this of course opens up an entire array of possible applications, of which the use as representational tool is the most obvious, the most evident, and probably also the most boring one.

A far more interesting application can be found in the possibility to introduce AR applications to the construction site. The benefits of this move are quite evident. In the scenario where the architect has to convey complex information to a construction crew for example. By demonstrating the exact positioning of elements and components to the laymen the margin for error can be significantly lowered. This alone would justify the use of AR, however it goes beyond this, as applications such as Fologram do not only convey static information, but also allow to demonstrate processes. Meaning that the information seen through the Holographic device not only shows the final stage of a fabrication process, but also the way to get there. The workshop Augmentations of the Real, made use of the AR application Fologram in order to overlay virtual with real artifacts. Using a HoloLens Students were able to perceive the montage points for the panels (fig.4).

Differential Growth Algorithm
The panels were based on application of a space filling curve algorithm devised from Grasshopper. More specifically it was a differential growth algorithm that was applied on a simple rectangular plane in order to fill the space with a single line that never crossed itself. The main aim in avoiding self-inflections and a continuous line was to develop a fabrication protocol that supports the use of fused deposition modeling without inflating areas of the deposition by overlapping the toolpath. Due to the fact that the path did not intersect, the integrity of the panel was not given. A single layer rather responded in a very elastic way. By applying two layers, in different directions, the stability increased profoundly (fig.5). Providing a high integrity panel with a low material consumption. No specific structural analysis was done during the short workshop, but it certainly would be interesting to optimize the process by making the differential growth algorithm response to specific pressures such as gravity, loads or wind pressures. This could be a result out of the workshop which would command further exploration in larger scale, for example for load bearing facades. Of notice is also the use of coloration during the fabrication process. In recent years ..... has been experimenting around with the use of continuously changing colorations in the fabrication process, as evidenced for example in .... fabrication courses at .... , or in .... studio at .... In the case of the Augmented Realities workshop at .... a specific color palette was selected: Black, yellow and transparent. This combination allowed for multiplicious

effects such as slow transitions between the colors, the gradient change from opaque to transparent etc. The color palette was also the inspiration for the name of the column, which we called the Salamander column. A Salamander is a small lizard like creature that populated the Austrian Alps and who's outstanding characteristic is the yellow and black spotted skin - a warning sign due to the toxicity of the skin covered in dangerous samandarin. To keep the production of the column under control considering the tight schedule the decision was made to reduce the column to a minimum of 6 components, consisting of three panels that constitute the shell of the column and three support fins in the inside. The consistent materiality and coloration ensured that all these components could be implemented in a seamless fashion.

Conclusion
In conclusion it can be stated that the workshop Augmentations of the Real served as a successful proof of concept for two specific criteria. On the one side the application of AR as a mode of exploration for the enhancement of spatial experiences, as exemplified in the virtual Hypostyle hall presented in the exhibition. The focus of this aspect of the application of AR is on the potentialities as a mean of expression within three-dimensional space. The combination between real, actual and virtual columns present themselves as a commentary on the lineage of the column as both technical mean of production as well as cultural signifier. The virtual column at the end of the day is most likely the epitome of a column as a pure cultural signifier, rather than just a support structure. This approach allows for a critical interrogation of the column in our contemporary context, and more specifically within the realm of computational design, The second criteria examine the use of AR within the construction site, by applying it in small scale in the fabrication and montage of a columns. Special attention is given in this case into the implementation of human ingenuity and pattern recognition talent within a robotic fabrication setup. The workshop participants used a HoloLens and Fologram setup to precisely position the components of the Salamander column. This ensured not only a precise setup of the components but also quick progress with a low error margin.   In a next step this approach will be applied to a more complex model, consisting of more components. The main aim however, is to apply this technique not only in the save environment of the fabrication laboratory, but also in the wild - the construction site.

From Lab to Field: Extending the Architectural Design Studio to Integrate Emerging Technologies
        Corneel Cannaerts, KU Leuven

Extending the Studio
The architectural design studio, as a place for educating future practitioners, is faced with two necessary dissociations: the distance from practice and its futurity. While the responses in architectural education have been varied (Spiller 2014), the question of how to integrate emerging technologies seems to further sharpen these dissociations. This paper discusses the lab and field, two learning environments set up as extensions of the design studio aiming to question the impact of emerging technologies on

architecture. These extensions are particular ways of responding to the dissociations between the design studio and practice and its futurity: through hands-on experimentation with emerging technologies and questioning their relevance for architectural practice and culture, by exploring the impact of technologies on the environments in which we operate as architects, deliberately looking for places and sites where emerging technologies manifest themselves with a particular urgency. The argument builds on a number of design studios, workshops and elective courses, and describes the shift from lab to field in terms of subject matter, spatial setting and pedagogical approach.

Setting up the Lab
The [name removed] lab was established at the Faculty of Architecture of [name removed], as a place for hands-on experimentation with digital fabrication and computation as drivers for architectural design. The lab was setup based on my extensive experience in using computational design and digital fabrication as design media, i.e. exploring how these emerging technologies mediate design processes. Over a period of seven years, the teaching and research practice established at the lab developed from technology-based tutorials to design-driven elective courses and workshops, shifting from the acquiring of technical skills to questioning the impact of technologies on the practice and culture of architecture. Rather than looking at digital fabrication for closure, i.e. closing the gap between the designed and fabricated artifacts, it explored how the encoding of design in a file, the operations of the machines and the materials they work with, contribute to the fabricated artefact.   The paper will discuss in detail how this approach was developed by describing the pedagogical setup and results from two workshops and design studios: (1) [title removed], looking into robotic fabrication as drawing with matter, (2) [title removed] questioning the role of machinic drawing within architectural practices mediated through emerging technologies.

Into the Field
Architects, both in practice and in academia have approached digital technologies mainly as an extension of their toolbox, developing digital means for drawing, modelling, calculating and communicating architectural ideas. The questions addressed at the [name removed] lab while shifting from technology-based teaching towards addressing the impact of digital technologies on architectural practice and culture, were still looking through the lens of technology as a medium, ie technology as a means of designing and fabricating architectural artifacts. While establishing the teaching and research agenda of the lab, it became clear that emerging technologies are increasingly provoking new challenges and questions to architectural practice, not through their agency as design media but in the impact they have on the environment.

The environments in which we operate as architects are increasingly saturated with digital technologies: internet-of-things, global communication and transportation technologies, mobile devices, increased satellite coverage, location-based services, ubiquitous computing... (Oosterman 2017). What distinguishes this technological layer, or technosphere (Half 2014) from previous human-made infrastructures is the

interconnectedness of devices, people and environments. This 'accidental megastructure' is not designed but emerges as a 'stack' of interrelated fields (Bratton 2015) and gives rise to radically new geographies (Mattern, 2016). These connected technologies heralded for their potential to enhance our build environments, improve our lives and democratise access to information, come with a dark side; its slick interfaces are enabled through resource depletion, cheap labour, exclusion and pollution (Young, 2016). The material impact of our collective technologies is so extensive it will leave a lasting imprint on our planet, prompting geologist to established the anthropocene, as a new geological epoch (Turpin 2013).

To begin to address these challenges we setup [name removed] studio, a local node in the international [name removed] network of architects, artists, scientist and activists exploring new models for architecture within the emerging fields of the anthropocene and the technosphere. The design studio questions what these phenomena mean for architecture, a discipline both complicit in and seemingly incapable of responding to the challenges they pose. It addresses these issues by rethinking our modes of operation and our position as architects designing embedded in these fields. [name removed] studio has run as a master design studio for three years at the Faculty of Architecture of [name removed], we extended the teaching activities of the studio with three elective courses and workshops. The goal of the design studio is to further develop its research agenda and anchor it within the school, to enable us to deepen the gained insights, to develop a platform to host discussions, exhibit and publish the work.

The studio aims to investigate the potential of architecture as a medium to explore disrupt and raise questions rather than solving them. We think that architects should proactively engage the complex reality of today rather than passively waiting for design briefs and projects. The design studio trains students in taking position within contemporary fields and provides them with a platform for developing their future practice. The elective courses provide students with the necessary critical tools, skills and media. Our weapons of choice are design fiction, spatial narratives, speculative media, imagineering, hacking and critical making. We operate as a collective practice, students are encouraged to actively participate in the organization of the studio, breaking out of the confines of academic architectural education. The studio undertakes field work and actively seeks encounters with practitioners, thinkers, makers, hackers, architects and artists operating in similar fields, to exchange alternative practices, to share experiences and ideas. The paper will discuss in detail the organisation and setup of the studio for the last three editions: (1) [title removed] dealing with hacking as an approach towards architectural design, (2) [title removed] exploring shifting border conditions in the technosphere, and (3) [title removed] working on the relationship between architecture and online platforms.

Shifting Technological Agency
The two extensions of the design studio discussed, the lab and the field, emerge from being situated both within practice and academia. The starting point for these extensions is the experience of the impact of technologies on architectural practice, leading to the assumption, or hunch, that the role of emerging technologies is not as

clear as it is promoted to architectural practitioners and students, i.e. that technologies are not neutral means for designing and fabricating architecture, but that technologies bring their own agencies. This assumption was substantiated firstly through setting up the lab, uncovering the agency of technologies as design media during design processes, and secondly by venturing into the field, beginning to unpack the agency of emerging technologies in our environment at large. The shift from lab to field can be described in terms of the role technology plays within the design studio, shifting from technology as a medium or tool, to technology as content or site. However, both question the agency of emerging technologies and their impact on future practice, as such they are different ways of bridging with the dissociations between practice, its futurity and the design studio.

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Performing Form: Judgment and Subjectivity in Algorithmic Architectural Design

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The computer's transformative effects in architecture's various disciplinary and professional expressions is a familiar trope in contemporary discourse. Yet, the position of digital tools and computational processes in architectural curricula remains contentious (Oxman 2008; Deamer 2011). Professionally accredited curricula negotiate a stifling demand for student proficiency in various commercial architectural software with broader pedagogical possibilities that emerge when one comes to terms with the many variances of computational design and making. This negotiation often manifests as a rift between instruction of software as black-boxed instruments for performing certain tasks (for example, drafting or outputting construction drawings) and instruction of computational (algorithmic, step-wise) processes for producing architectural space and form. This paper presents a pilot pairing of a core second-year undergraduate studio and a lecture course, which together introduce students to digital representation software alongside algorithmic processes for defining and manipulating geometric form. Although the pairing of a compositionally-focused studio on "formal systems" with digital media instruction is not uncommon, the courses that we describe put forward two reversals of this sequence: first, digital modeling software stubbornly remains an electronic pencil, placing emphasis on digital drawing as a craft-like form of skilled practice enmeshed in particular visual cultures, and second, algorithmic processes are performed by hand to make room for perceptual reformulation, ambiguity, and judgment. Furthermore, rather than existing as autonomous and self-referential, geometric form becomes a generator of programmatic and material possibilities through contextually-driven fictions. A core intention of this course sequence is to integrate computation, often seen as objective, non-deliberative, mind-less (i.e. automatic), with judgment so as to cultivate an ethos of attention, intention, and care. Perspectives on "digital culture" in architecture (Picon 2010; Carpo 2012) or lineages of "the digital" (Lynn 2014) have proliferated in the last decade and a half. A common critique of "digital" architecture is its overemphasis on the geometric and visual aspects of architecture, enabled by the computer's capacity to generate complex shapes and the seductive qualities of computer graphics (Frascari & Hale 2010). Digital and computational design is often deemed "formalist" in the pejorative sense, to point to a disregard for social, cultural, and environmental contexts. In response, neologisms such as "performalism" (Grobman & Neuman 2011) have emerged from efforts to reconcile algorithmic derivations of geometry with contextual parameters (parsed as data and information). The studio course probes the interplay between the generation of geometric form and the development of programmatic tactics. It orchestrates a confrontation between autonomous formal logics and contextual forces, using fiction to activate their encounter as a site for the development of architectural intention. Throughout the course of the studio, students learn to define and develop a generative method through transformation rules (Knight 1999; Stiny 2006); evaluate the architectural potential of resultant geometric configurations in two and three dimensions; translate between drawings and models (digital or physical) and creatively exploit gaps in moving between formats and media; and talk intentionally about the inter-relationship

between geometric form and contextual forces — social, technological, cultural, environmental, or other.

The first part of the studio consists of short exercises in which students define and iterate formal systems (systems of shapes and relations in two- and three-dimensional space) to generate architectural conditions amenable to human habitation. Through these exercises, students are introduced to generative drawing, visual computation, and formal interpretation. The students begin with a familiar object and transform it into an architecture through a sequence of operations, each corresponding to a week-long exercise: flattening, transforming, generating, lifting, and spatializing. Each exercise is coupled with a particular module of digital modelling in the lecture course (respectively, 2D line abstraction of an object, application of affine transformations, making a 2D compositional drawing and applying lineweights to express saliences, lifting elements on the Z axis, and 3D spatial modeling through Boolean operations of volumes or surface manipulation). These exercises culminate to a culling of strategies for making space. The full paper will include examples of student work, with particular attention to the creative tensions between conceptual consistency, perceptual ambiguity, and reformulation.

In the second part of the studio, students edit, merge, and refine their formal systems in response to an urban context that they abstract as a set of physical and other parameters (social, cultural, environmental, demographic, ...). Students are given a list of sites that are different but equal in areas, and each student selects a site that they judge as congruent to the spatial dispositions of their formal system. Their first task is to abstract salient geometric characteristics of the site through drawing and physical and digital modeling, so as to produce a "prepared" surface on which their form will seek its place. Then, students map immaterial forces of the site (as hand-drawn maps or data visualizations) so as to challenge, inflect, and ultimately programmatically activate their newly sited compositions. The confrontation of autonomous formal logics with contextual forces become the locus of intention formation and programmatic imagination. The students work iteratively to develop an architectural intervention that exhibits formal, programmatic, and material resolution with regards to a set of architectural priorities and student intentions. The examples added in the full paper will showcase the potentials of fictionalizing form as a way to develop possibilities of architectural intervention.

The digital representation course is essential in reinforcing the studio's aims to promote the development of personal strategies for talking about and making physical form and to cultivate a critical awareness of its origins and implications. Four thematic modules introduce different techniques: observations, compositions, instructions, presentations. The observations module centers on methods drawn from inside and outside the discipline that reveal logical systems through depiction. Scientific imagery and formal analysis are introduced as two such ways to probe visual material. Composition focuses on constructing form through algorithmic rules, moving gradually from the making of geometric rules to their application in orthographic and perspective projections. Instructions introduce scripting as a way to codify rules, subsequently allowing the

students to manipulate form through scripted procedures. Finally, presentation examines how formats can be used to investigate and articulate arguments. For each of these conceptual umbrellas, lectures are given to introduce the theoretical and historical contexts within which the students undertake technical tutorials and exercises. The gradual advancements between these thematics allow the students to preserve their capacity for attention and intention, avoiding as much as possible the relinquishing of control to the tool as a driver of design and aesthetic choices. While technical proficiency, as defined by the demands of the industry, has become a staple of undergraduate representation classes, this course posits the training of the eye as an equally important and useful competency. Assignments are framed and critiqued on the basis of the soundness of decisions, placing the deliberative process of choosing representational strategies at the forefront of design methodology. This is supported by a heightened concern with the development of visual literacy through various exercises (image responses and method acting) that aim to expand the corpus of references to which students may access; students become versant in compositional terms. This new framework of references and vocabulary facilitates discussions between faculty and students, as well as between the students themselves, as they collectively develop ways to evaluate and instigate work. These assignments form a framework for individualized design research methodologies—generating for each student a set of prompts to articulate, test, and defend ideas.

While digital representation remains a specific medium, it can only be properly understood through its continuities with and distinctions from the broader corpus of representation at large. And while algorithmically-derived formal systems bear historical links to debates of architectural autonomy and formalism (Kaji-O'Grady 2012) or automatic synthesis (Mitchell 1971), they are not impermeable to, and in fact can become devices for, approaching and understanding the complexities and urgencies of context as well as becoming more aware of one's personal aesthetic proclivities. Tactically slowing down (Knight 2012) and performing algorithms can open them up to these contingencies. Teaching digital tools and computational processes through their proximity with as opposed to distance from what is traditionally construed as "non-digital" practices, provides an opening for conscious and reflexive engagement of the modes of description and sequences of action that these practices encode. In recent years, the response to digital representation has mainly taken the form of the "post-digital" (Jacob 2018), an aesthetic driven by concerns of authenticity and autonomy. While the "post-digital" has opted for the emulation of the "hand-made" through software, this pairing of courses sought to introduce digital processes through slow, "hand-made" work as a way to secure attention, intention, and judgment as a pedagogical foundation. Architectural design and computation then become a means of critically and creatively understanding each other.

MassMaker 3.0 - Design Leadership in the Digital Arts

Jeffrey Schantz, Massachusetts College of Art and Design
Peter Jurgensen, Massachusetts College of Art and Design

MassMaker 3.0 is an interdisciplinary design studio to teach design leadership and collaboration in the digital arts for the Convergence Era. Using digital design platforms like Fusion 360, advanced manufacturing and rapid prototyping capability of 2D/3D additive and reductive manufacturing techniques, this course offers a comprehensive simulation of the entrepreneurial approach to the design and making of things. The course simulates the development cycle of ideas from research, inspiration, design, development, prototyping, fabrication, business plan development, marketing and launching. Working in teams, students collaborate with colleagues from different disciplines, learning design leadership skills in a problem based, hands on environment of shared success. Students taking this course learn leadership, technical, collaboration, project and team management, and marketing skills. Our goal is to create world class IP suitable for launch into incubator and accelerators in the Boston Innovation Ecosystem like MassChallenge, 3D HEALS, and MGH CAMTech with the objective of launching businesses. The skills gained in this course will have a wide range of applications across a variety of design, engineering, and managerial disciplines.

The curriculum is designed to teach "digital arts" in the Bauhaus Tradition, only with Industries 4.0 technology, demonstrating the convergence of collaborative design and distributed fabrication/sourcing. The approach instills our students with a global perspective of the design process. This shared vision and our unique "think, make, model, present" approach is used to explore applied solutions addressing broad themes: wearables, devices, health and wellness, sustainability, and the built environment. Students form teams, create a problem statement based on themes, propose an idea to solve the stated problem, design, and prototype and fabricate a solution

Using Fusion 360 as our collaboration platform, we will use a collaborative and iterative prototyping process, with emphasis will shifting according to the methods and processes required at each phase:

- Think - Concept Design Phase: The purpose of this phase is form teams, set up collaboration on Fusion 360, define the problem and explore solutions.
- Make - Design and Fabrication Phase: The purpose of the phase is to develop the proposed design through rapid prototyping using Fusion 360 as the primary design/fabrication platform. An important step in this phase is breaking down the problem into its components, and visualizing the assembly phase.
- Model - Fabricate and Assembly Phase: The purpose of this phase is to build a working prototype in an experimental fashion, adjust and tweak the idea through continual improvement, make evolutionary changes, and refine concepts, iteratively using techniques learned in the Make phase to refine the prototype.

- Present - Roll-Out Phase: The purpose of this phase to build an outline business plan, branding, elevator pitch, and demonstrate the working prototype. Teams will do a final presentation of their concept

Digital Instruction and the Pedagogy of Hesitation

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"The computer has no capacity for empathy, for compassion. The computer cannot imagine the use of space. But the most important thing is that the computer cannot hesitate. . . Working between the mind and the hand we often hesitate, and we reveal our own answers in our hesitations."

Juhani Pallasmaa[1]

"Unfortunately, no one can be told what the matrix is. You have to see it for yourself. . . After this there is no turning back. You take the blue pill, the story ends, you wake up in your bed, and believe whatever you want to believe. You take the red pill. You stay in wonderland, and I show you how deep the rabbit hole goes."

[Morpheus to Neo] The Matrix, 1999

The reconfiguration of the world of embodied existence into a digital one over the past two decades has been a transition full of potential and possibility, but also one of pedagogical concern and uncertainty. Faculty in every school of architecture are still grappling with the challenges of building curricula which introduce digital modes of architectural production at the onset of design education while simultaneously maintaining a balanced emphasis on developing the student's spatial and experiential imagination and its direct translation into architectural space.

The generation of students entering architecture and design schools today are the first to be fully native to digital culture with computation, virtual existence, and access to information streams as equally relevant interfaces with the world as direct physical stimuli of experience. However, their fluency with computation does not at first appear to facilitate an innate ability to use digital tools to develop the spatial imagination or to create new synaptic connections between the spatial imagination and physical form. In fact, we often see the opposite. Rather than adding spatial depth, digital tools-everything from modes of production like laser cutters and 3D printers, to visualization tools such as Rhino, V-Ray, or Grasshopper-seem to flatten space.

As Juhani Pallasmaa argues, this may be due to the fact that, at present, feeling, empathy, and the tangible engagement of space can't be digitized. The implication is that the digital comes with a handicap that needs to be overcome in certain ways, primarily and only through the re-initiation of direct physical interaction with space-making. We begin by using Pallasmaa's polemic as point of departure in which we take distinct positions in order to explore this question as a dialogue between pedagogies of the virtual and the physical, and then attempt to explicate pedagogical terms by which a synthesis between physical and digital space-making might bridge the apparent disconnect between the two modes of developing the student's spatial imagination. A range of precedents from architecture and

the allied arts will be analyzed to tease out various aspects of the polemic. Following, we will focus the attention of the paper on the first year of architecture studios, using examples from our past and ongoing studio teaching experiments to tease out and synthesize possible pedagogical practices. A poignant take-away from Pallasmaa's critique of the computer is that the design process is one of constant starts and stops - a process of both conscious and unconscious hesitations which cannot be replicated in digital computation. Yet computation has supplanted experience as a new kind of authority, and it is particularly persuasive in the educational environment simply by its capacity to provide outputs that imply that digital results are equivalent to self-conscious awareness and action within the design process.

Systems of measure are central to the conflict. Often taken for granted, there is a significant history of critical practice that re-frames issues of measure as a given design condition. For artists such as John Cage and Marcel Duchamp, systems of measure became a means of engaging chance as a form of critical practice.

Marcel Duchamp's investigation of the metric scale in Three Standard Stoppages is a compelling argument for the necessity of both standardization and chance. Stoppages was conceived and originally executed in 1914, and is obviously a work that could not have anticipated the computer, yet it seems to resonate within this critical discourse today. The classical rule of three that serves as a model for Stoppages is of consequence in this context, given its inherent contrast to the foundations of computation, which is binary. Though it is not consciously referencing computation, it engages the radical difference between a binary dialectic and, in this context, the othering of the third which simultaneously appears to stabilize the action by using classical hierarchy and destabilizes it by the possibility of an infinite zero-one dialectic of meter-not meter that might be seen as "computational".

We can begin with the fact that the subject of the piece is the concept of the meter, which is physically embodied in three separate meter-long strings. These strings are dropped to the ground from the height of one meter.[2] The act of dropping the string is performed three times, with the result recorded by gluing it to canvas, cutting it as a profile edge onto a sheet of wood, mounting the string to glass, and finally encasing each of these "new" meters in a precisely constructed box. Many details about this experimental work of art are fascinating, but two aspects stand out: First, the necessity of at least three stoppages, and the necessary roles of both a standard and of chance in determining the work of art.

The addition of a third is an overt destabilization of binary systems. Binary is a coupling, which is a-serial: a closed system. A coupling can only determine internal relationships, and can only be identified by relationships as defined by a single other. The pair, ANY pair, can only be understood in a binary relationship, either of similitude or of contrast. In Duchamp's Stoppages, the dropping of the third permits similitude and contrast, but ultimately opens an entirely new realm of patterns and series. More importantly, the third represents the becoming of process, as well as the possibility of infinite evolution within that process.

In the rationality of its process and the irrationality of its deviation from the norm, Stoppages becomes a pedagogical model in which the role of chance and its discourse with measure breaks the logic of a fixed regime. The immediate disconnection from the precisely measured and contained "thing that was" at the release of the string decommissions the

meter as a standard in the same moment. What is implied is that, in the abstract one can conceive of the meter as part of a given system. It also implies that, beyond the regime in which we conceive it, we can also physically demonstrate a process by which its deviance over time is impossible to predict, and therefore a matter of random chance. These stoppages, as "reconstituted" meters, are authorized and schematized by the process and their subsequent curation. They become part of a process which allows for both precise definition and infinite possibility. Three Standard Stoppages is an analogue for the design process and the possibility of hesitation in modes of digital design. Like the meter, computation is a similarly determinant regime. One cannot introduce chance as accident or as decommissioned consciousness in the same way as Stoppages because the systems of computation are logically hermetic environments and always require external intent. One must give explicit commands for computation to work.

Is it possible, however, to introduce new terms to the computational environment of the process as Duchamp does in Stoppages? Is it possible to introduce terms of chance, or hesitation, as a pedagogical mover within the digital design process? The answer is most certainly yes. So, the real question becomes what are the terms for the process? If they are not by chance in the same sense as that of Stoppages, which they are not, what could these conditions be?

Chance and hesitation in the design process reveal the existence of modes of slow thought and reciprocating reflection within the design process. These are not computational. Such moments of slow thought in early architectural education are especially important because the young architect's consciousness has not yet encountered many of the languages of spatial thought. Fluency is far from immediate. The question then becomes how to introduce conditions of slow thinking into digital platforms, thereby equalizing digital thinking with physical understanding. One approach is the deployment of hybridity and overlay, as well as translational back-and-forth between physical modes and digital modes of production. While this approach is nothing new, and may seem somewhat obvious, the problem is how to teach the student to think in equal measure while operating across digital and physical modes. Therefore, the intent of hybrids and overlays that move between digital and physical is not only to cultivate graphic sensibility and consistency, but to introduce challenging moments of translation between tools during which moments of hesitation are allowed to occur.

Our digits in conversation with the digital.

Notes
Interview with Rachel Hurst, https://architectureau.com/articles/juhani-pallasmaa-rachel-hurst/
https://www.toutfait.com/unmaking_the_museum/Standard%20Stoppages.html

Educational Philosophy about the HUNCH V

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

Ordering Systems: Understanding the Code of Context
      Bradford Watson, Montana State University

Over the past few years David Coleman and Stefanie Sanford, president and chief of global policy for the College Board, have been examining and revising the SAT college entrance exam. In an interview with Thomas Friedman they stated their fundamental question that prompted these changes. Which is the most important skill or knowledge correlated to success in both college and life? Their response was "Two Codes", computer science and the U.S. Constitution. The reason for this is that if one is going have agency and an ability to make change, one must understand how these systems work. In short, the "Two Codes" model empowers those who understand the logic of how a system or set of interconnected systems work. Fundamental to a designer's ability to create something, to intervene and make an impact is the ability to comprehend the ordering systems that have created the context they are working within. One must understand the logic of the code to know how the system works to determine where opportunity lies. As we exist in a dynamic environment, seeing the code allows one to engage and manage the complexities of the world such that we can manifest architectural space. Seeing the ordering systems reveals the opportunity for intervention that leverages the existing systemic conditions to do more than the client or brief asks. Furthermore, it has the potential to be generative in nature by providing opportunities within undervalued or misunderstood conditions. By understanding the code of the site, one can reveal latent potential and engage in opportunistic architecture that is not constrained by conventional evaluation. This approach gives agency to constituents allowing for emergent design.

In order to do this one must engage in the investigation of sites, conditions or programs through a systems lens documenting the ordering systems or code. Design must be informed by an understanding of the existing conditions, be they physical (terrain, environment, structures, people, species, etc.) or virtual (laws, policies, perceptions, desires, etc.), and their interconnectedness and causality. This is nothing new in the fields of planning and landscape architecture that manage complex infrastructures and have an ecological underpinning. However, its use in architecture tends to be limited to aspects of engineering and sustainability. Through a synthetic mapping of the conditions potential is revealed to define the parameters of design intervention within the systems, expanding the capacity of space making.   This approach is especially important within the foundation design studios as it establishes a student's evaluation methodology for future projects. At X University the foundation studio is split into Fall and Spring, allowing for each semester to have a focus on the systems that define both the natural and constructed environment. The fall semester focuses on physical systems, primarily those that are natural. The spring semester focuses on those that are

virtual, primarily related to policies. Both semesters utilize the same context, the connected streams and rivers within the region.

Critical to this methodology was to create a process that did not start with a problem solving objective but one based on research without a predetermined agenda. To do this, students were tasked to look at patterns in the environment that were a result of the ordering systems. They were tasked to observe their site and document these patterns by natural and virtual systems. Their documentation was a re-presentation of the site through a synthetic mapping of the conditions. They are given no objective or program beyond documenting the complexity of the site. They must identify the interconnected relationships happening on the site and causality / feedback loops. The review of their findings is purely quantitative. Once students had an understanding of the interconnected systems that informed their site, they were tasked to alter the site utilizing a leverage point or points. Students tested the capacities of the different systems and how changes to intensities or inputs would impact the overall. To do this, they created physical parametric models utilizing materials that embodied the characteristics of their systems. These models allowed the students to manipulate one or more of the site parameters to reveal its influence on the rest of the site. In this process they were determining which inputs had more influence and which required significant effort for little change. The parametric models became a tool for them to evaluate the site and their future intervention. This process allowed the students to develop their own evaluation criteria generated by their research. This was done through diagramming and writing in parallel with the mapping and parametric modeling. The diagrams articulated the systemic relationships on the site with their inputs, outputs and feedback loops. The writing synthesized the reasoning for the systems in a quantitative capacity. They were limited in the number of diagrams and writing to prioritize the most important elements. Eventually they created a single diagram and no more than 250 words to articulate the context of the site, the systems, and their evaluation criteria.   Finally, the students were tasked with identifying a space of opportunity within the systems where an intervention could leverage the latent capacities. This space of opportunity and its capacity is only visible because of their understanding of the systems, both physical and virtual, that inform the site and context. Their intervention was not to make something better, worse or solve an issue. The intervention was to be a catalyst for larger change within the context and should inform and be transferable to other sites with similar conditions. In the end, their designs were the result of quantitative research, were performative and were evaluated on the criteria they established. Knowing that they could evaluate their work based on a set of clear criteria they had established created a peer review culture within the studio supporting their design development. This was important in giving students confidence in their formal reviews, something many first year students find intimidating.   Fundamental to all of this is that the students maintain a constant immersion within their project and process. They must constantly refer to the coding of the site for their evaluation and not rely on opinion or personal preference. To do this, the systems are embedded within the work. All of the elements of their design development include the systems in a tangible way. Whether this is working with materials that embody the characteristics of the natural phenomenon or constructing their site model laden with the policies in a

physical manner, the systems provide a resistance to arbitrary decision making. Through a multiplicity of techniques, the students engage the systems at every step further reinforcing the overall studio pedagogy. Though an iterative series of projects examining the site, students developed an understanding of large system connections and the micro-conditions of a specific site as agents for architecture. Students defined programs for the sites as a result of analysis rather than being given a required program or a problem to solve. The programs leveraged latent potential and engaged emergent capacity, reducing the investment in design for greater impact. This understanding of system integration and program as an active condition informs the larger agenda of architectural education and the future of these particular students. This type of thinking moves program from a list of spaces to one that is a set of performative criteria not bound by formal critique. Similar to any early design studio, students must continually be challenged to be critical of the new medium and establish strong agendas within an agency of research expressed through different forms of visual communication. It is too easy to resort to knee-jerk preconceptions of the context and site as something we see rather than part of a complex and integrated system. The students are constantly asked to go back to the criteria as a basis for evaluation. Through an iterative documenting of the code and a multiplicity of permutations, students realize their agency as designers within the world. This way of systemic thinking is an absolute necessity in our dynamic world. Projects that can understand the implications of their existence in a larger, rapidly changing context are more responsible and realistic. They are able to understand their potential impact and provide valuable space that is performative. Similar to our influence and response to global warming - sometimes proactive but more often reactive - design can overlook the small aggregate pieces that make the larger picture. By objectively examining the site and context to determine its code, students are able to make design decisions that are proactive, not relying on a prompt from a professor or client, and even expand the role they can have as a future architect working further upstream in the process.

Research and Teaching as Actions Supporting the Specificity of a Territory

Pier Francesco Cherchi, University of Cagliari
Marco Lecis, University of Cagliari
Marco Moro, University of Cagliari

We would like to present and discuss a special condition of teaching and research in the field of architecture and, specifically, of architectural design. As design professors of a small school of architecture - inaugurated just over ten years ago in an area that had no schools of this kind - we live a condition that we believe is a special and interesting case study. A condition that at first sight might appear a limitation and that, on the contrary, it has also proved to be an opportunity and has offered us the occasion to experiment innovative research tools and teaching methods. The school is located in Sardinia, a poor territory and above all an island, a place that strives every day with the difficulties of physical communication with the outside world and that has introjected this condition from its history and from the character of its cultures. A condition of isolation that led people who are responsible for the social and economic growth of territory, to address

questions of main relevance to the local university community in the past few years. The two areas, one of the concrete management of the territory and one of study and teaching, have therefore been able to converge and intertwine: the activity of the design studios attracts real-world problems presented by the political, social and economic reality of the territory. Keeping together the different areas, making the activities converge while maintaining the specificity and coherence of the actions developed, is a difficult but stimulating task that we've been tackling in the last ten years.   The activity of design research and pedagogy of the architecture school of Cagliari for the abandoned mining landscapes of Sulcis One of the most significant cases, in which the above-mentioned conditions of collaboration and convergence between the real urgencies of the territory and the research and teaching tasks produced significant results, is the case of study, planning, and intervention in the mining landscapes of the Sulcis region. The Sulcis region is located in the south-western area of the island and today is one of the poorest in Europe: this condition derives from the crisis that has marked its main industrial economic sector since the late '70s. The region, one of the least inhabited in the Italian territory, has developed since the mid-nineteenth century, with the beginning of the intensive exploitation of its mineral deposits. Sulcis is a territory rich in fascination and history, one of the wildest and most striking of the second largest island of the Mediterranean. This portion of land, developed with a varied profile along seventeen kilometers between the coastal landings of Funtanamare and Buggerru, as well as for the uniqueness of landscaping, constitutes the limit of a territory geologically marked by significant mineral resources.

During the 30s, the fascist regime invested heavily in this territory planning a sequence of mining sites and founding a whole city, Carbonia, inaugurated by Mussolini in 1938. However, the post-war period is marked by the crisis of mining activity initiating a process of slow abandonment, orphaning an area that had been designed and populated at the service of the territory. Nowadays, the same territory appears, by virtue of its history, deeply wounded even in its natural resources, degraded and affected by pollution.   Many interventions undertaken in this territory in the last fifteen years have been conceived and partly realized with the support of our school, involving the entire urban area of Carbonia, concerning both its housing stock and disused mining sites. The privileged area for these activities is named "Grande Miniera di Serbariu", characterized by the recovery and conversion of several buildings, and new remarkable interventions as the new intermodal station based on a project by the Swiss architect Luigi Snozzi. The collaboration between territorial institutions and the school of architecture has achieved an important recognition: the Landscape Award of the Council of Europe in 2011.

Among the most recent interventions, in 2016 we designed the transformation of a building at the entrance of the large mining plant. This provided the opportunity to redefine the relationship between the mine and the town of Carbonia, prefiguring new possibilities for its territory. The recently completed building was selected and exhibited at the last Venice Biennale in Summer 2018.

Methodologies adopted and experiences From the beginning, it seemed clear that the contribution of the school to urgencies of the territory, despite the cultural and scientific approach, should not merely involve small groups of researchers and professors. On the contrary, the idea was of an expanded experience, which would integrate concrete proposals elaborated with mature designers, with new reflections and debates about the adequate and pertinent solutions to be given in front of specific topics, open to the student community in design studios, lectures and workshops. A challenge of openness that is currently requiring multi-level coordination of actions and verifications of the effectiveness of the results: the development of new methodologies and new architectural teaching formulas appears as a necessary condition.   We are involved in these issues on three levels: within our second-year design studios; within our final thesis studios with the involvement of students at the end of their career; lastly in the form of research team composed of specialized graduates, researchers and Ph.D. students, more directly involved in the collaboration with local public institutions. With this paper, we would like to present two indicative cases of our pedagogic and design-practice research approach and methodology: the recovery of the bicycle warehouse and the redefinition of the urban facade of Serbariu mine complex in Carbonia, and the masterplan for the waterfront of the mining village of Buggerru.

The recovery of the bicycle warehouse and the redefinition of the urban facade of Serbariu mine complex in Carbonia, 2016-2019 The design process concerning the building recovery has been organized as a team-work of specialized researchers, who have defined the project strategies and have supervised all the design phases up to the construction. This small group includes professors as scientific directors, young scholarship graduates with the support of some external consultants. The project solutions grew up in parallel through design research conducted in the design studios, thesis and doctoral works, including also intensive workshops dedicated to the theme of mining landscapes. The project focused on these specific themes: redefinition of the urban facade of the disused mine; recovery of pre-existing buildings; conversion of the mining plant to new contemporary functions. The building in question has been transformed into craft workshops and showroom.

The masterplan for the waterfront of the mining village of Buggerru, 2018-in progress In 2018, we started a collaboration with the city hall of the village of Buggerru. Located in the stunning site of a narrow valley facing the bay in front of the sea, the village maintains a large part of the pre-existing buildings and facilities connected with mining activities. Some of them have a monumental image: two large massive structures lying on a steep stream in front of the sea where material extracted from the subsoil was screened and selected before being loaded in the nearby landing structures placed at the foot of the village.   Integration between the research-by-design and teaching plans These practice-based design research opportunities, developed in frail and sensitive contexts, forced the pedagogical and didactic process to formulate new strategies for the transmission of the architectural discipline. Initially, the complexity of the topics raised some questions about the possibility of being effective in architectural pedagogy at the level of second-year studios. However, we decided not to separate the levels, the one of research and that of teaching design as a discipline. The strategy adopted

provides two main actions, based on the idea of simplification and fragmentation. Firstly, classes made up of 90 students, were divided into small teams composed by two or three students, in turn grouped into macro-groups of six. This set-up allowed the teaching staff composed of two professors and five assistants, to manage a large number of students, simplifying and guaranteeing constant interaction between teacher and student during the whole design process. Associated with this organization of the studio, has been established a radical and sophisticated idea of design operation, according to the logic of small interventions coordinated with each other. In the case that we wish to illustrate, the regeneration of the mining and coastal village of Buggerru, the strategy focused on the distribution of small interventions placed in significant positions, and for this reasonable of reconfiguring the place and the landscape thanks to punctual modifications, rather than totalizing actions that replace the existing environment and set a new beginning. We named this strategy "designing by constellations", a philosophy of intervention based on small-scale, low-density, separate and in mutual tension insertions. Our contribute will illustrate the case studies, the teaching methodology and how the design practice strategy adopted has achieved positive results both in terms of pedagogical efficacy in the architectural pedagogy, and in terms of real interventions in sensitive contexts.

Naturally Brutal: Landscape as Icon
Dragana Zoric, Pratt Institute

If traditionally architects and planners have looked at the city through buildings, infrastructure, and landmarks — what is known as "urban fabric", this studio is a call for a shift in thinking to a focus on land, landscape and the "unbuilt" (here understood to be both natural systems and the human constructed landscape). In so doing, the studio examines how the (1) formal and spatial configuration, (2) topographic and ecological rigor of site, and (3) commitment to social equity and progress - of key brutalist buildings in 1970/80s Yugoslavia can be applied and translated to a public landscape/ architecture condition of New York City today.

The goal of the Studio is to acquire a formal and organizational strategy - tools and techniques - from a comprehensive historic model, instigate a discourse and design inquiry into current cultural and social problems and processes in the US, so as to be able to formally address them, in a robust and specific way, through building. As a form-finding device, we will draw upon collage, a technique able to leverage form, geometry and narrative, yet keep them in a simultaneous abstract equilibrium. Collage As the impetus for deriving spatial and formal techniques, the studio will sample and re-process New York's urban landscape into a black-and-white cinematic documentation, to be collaged, repurposed, montaged and made hyperreal or abstract. Techniques such as: cuts, blends, shot/countershot, double exposure, action/scene matching, stedicam/false point of view, staccato, etc can be used and purposed in a recombinant process of experiment and design.

The premise is that landscape can be politicized through design in far more nimble way than architecture, and as such, it can be the vehicle of social equity and change, and in so doing, presumably, can acquire the status of icon. Icon Research: Based on widely cast and deeply conducted research, the studio will investigate what it means to be iconic in the built environment. Attempting to define the conditions and parameters that make a building an Icon, the goal of this exercise will be to interpret /translate those into a series of architectonic moves / strategies. The main subjects of investigation will be Yugoslav brutalist structures selected. If needed, through select curated examples, show ranges of performance of the iconic.

Landscape Conventionally, architecture is understood to be static, primarily focused on separating and delineating (outside from inside), with expertise in organizational logics, formal robustness, and spatial complexity. The deftness of landscape, however, lies in its expert ability to organize and regulate dynamic systems, fluctuation, temporality, change, and the management of simultaneous systems of performance, a conflation of the ecological and economic. Going beyond the architecture/landscape dichotomy, and also acknowledging the fallacy of their simultaneity, the studio will deal with extremes of each, when confronted with the other. What is the urban and architectural response to "nature" (or vice versa), and the degree to which it can be primary (a driver), merely function as an accessory to architecture (or nature), or some model in between? As an example, can an urban forest be the de-facto literal and contextual fabric for a new urban event and model? Historical dialectics of natural and man-made, technological and pastoral, and exterior and interior will create re-invented states where architecture and landscape are renegotiated on all fronts.

Therefore, what is the extent that the two systems can define one another, be concurrent, infiltrate, dominate, subsume? Or - are these terms inaccurate and a new paradigm should be put forth? Through research, we will also consider alternate hosting strategies and invent novel hierarchies between that which is sealed, and the porous and dynamic. A stitching of host and hosted will mandate that the stitch (as a minimum) be public and civic in nature while residing in programs educational and cultural.
Public Space The project will redefine public space, as well as renegotiate people's relationship with their River and the landscape of their City, testing methods of inhabiting vs surveying, being inside vs on the periphery. We will explore commonly opposing issues of natural vs artificial, planted vs constructed, open-air vs enclosed, flat vs topographically varied, isolated (solitary) vs engaged (plugged in) - so as to derive simultaneity of each pairing and figure out where and how to negotiate that balance.
The site will be located along the stretch of the East River in Manhattan - along the waterfront, or a pier and its surrounding waters; their boundaries open to critical inquiry, and change. Contrary to preparing a site to receive a building, the project proposes the design and production of the site itself, a constructed ground and a constructed water simultaneously. Site and landscape do not become accessories for architecture, but become coincident with it, simultaneous, inextricable. Process/Sequence: 1. Precedent Research. 2. Collage/Montage. 3. Site Investigation. 4. Speculation: Icon. 5. Construction & Translations. 6. Fabrication: Model Tests, Transformations. 7. Project/Synthesis Learning Objectives The Studio will increase expertise in architecture

and landscape architecture simultaneously. Students will learn how to examine and analyze a building - both as physical and social construct. To that end, we will utilize the medium drawing as a to tell a story about a building, its place and people. Landscape expertise will encompass an understanding of the parameters and variables of landscape architecture, its methods of construction, materials - plants and others, landscape programs and their lineage, and an ability to think critically about issues in landscape. Students will be given the opportunity to select a site and will be required to generate a program as a response to analysis and perceived social need. The intention is that the Studio be a preparation for Degree Project, where students will need facility in criteria for evaluating site and crafting program. The Studio will also increase knowledge of architecture and its tectonic methods and techniques. Deliverables Each phase of the project (including but not limited to Precedent Analysis, Site Analysis, Landscape Strategy, Program, Design Strategy, Final Design), will require detailed drawings with an appropriate range of scales and levels of inquiry and complexity. These drawings will show possible narratives, scenarios, multiple avenues of analysis, design strategies, with their application to the literal physical artifact(s). Graphic organization of the information and project content will be another strain of design. Considered to be "final" artifacts that should be included in a portfolio to show the range of expertise generated through the project, these drawings will also include visual documentation of methods of understanding site and the dynamic processes of landscape. Physical models will be considered Starter Components - tectonic objects viable in the horizontal serial or vertical loading conditions, structural elements, able to contain space, or perform an infrastructural function - like channeling or holding water. They will be thought of as universal, and able to address certain latent, deactivated or passive (neutral) requirements and states in a project, able to formally address increased activation (example - faster water, deeper enclosure, larger aperture, greater porosity, etc).

Understanding the Informal City: Its Interruptions and Generative Realities
    David Isern, Texas Tech University

Most American cities are designed as mitigators between the ideas of continuity and uniformity, promoted and incentivized by not only the local government but also from the people who live in them. The continuity and uniformity become part of the larger arrangements of multi-levelled elements that provide the actors of a city with amenities, commodities, and comfort levels that try to eradicate the actual idea of what a city is - a space for living realities. Therefore, it is essential to look at the city as the opposite of continuity and uniformity. The antithesis of being continuous and uniform is to be interrupted. It is in these interruptions that people become aware of the episodes the city creates. These episodes contain a narrative not only of the people but narratives of every event that takes place, minuscule or prominent, and that affects the city's behaviour, creating a true reality of the city and its narrative. This studio looks at the post-industrial transformation of Latin America, as a contrast to the North American city. The studio examines the questions of how cities in Latin America are able to oscillate

between the western pragmatism and the emergent informal that creates many of the cites that we see today.

To understand further the notion of a city, this studio begins by looking at Jane Jacobs' writings where she expresses how "city people loitering on busy corners, hanging around in candy stores and bars and dirking soda pop on stoops,"[i] start to create togetherness of events within the city itself. These events, whilst viewed as a single moment and as part of a larger scale, are not dominant factors, they are independent interrupters of the continuity and uniformity of a designer city. This contrast between the North American and Latin American cities allows us to ask the fundamental questions addressed in this studio: how much of these interruptions are needed to have the reality of the city come to life? Do people realise that they are characters in the grand narrative of the city? Are these actors aware that they can become interrupters themselves?

This studio, therefore, places the student at the centre of the problem of the informal city. Looking at how the interruptions occur, and how they have become nuanced interims of the city itself. It is in these occurrences and interruptions that the city is categorized as large laboratories that can provide many answers that are needed for evolution. Following these ideas, the process tasked to the students was to explore through site analysis and detailed field mappings how cities in Latin America have developed a fluent urban form, even though its growth pattern is one that is not continuous or uniform, rather it is ad-hoc and interrupted. These Latin American cities have becomes a container of expontaneous infrastructures, field conditions, cultural ecosystem and abstract queries that operate in a social and geopolitical regime that is fundamental in their establishments of the informal. (Phase 1 - Figure 1)

After this, the students are introduced to the formal idea of Ontologies as a metaphysical relation between the state of being and the idea of becoming. Ontology is the philosophical study of being, with an overarching concept directly relating to the aspect of becoming, existing, and more important reality. It is here that students are able to translate their findings of the city, its interruptions, and its ad-hoc nature to discovered in their mappings and field studies a meta(physical) ontology - all based in reality and objective perspectives. Their once speculative notion and approach to the informal is no longer salient. Now a form that contradicts itself but does not negate each other through the process is generated. (Phase 2 - Figure 2)   As we continue through this process and enter into phase 3, students take their mappings and filed studies, together with their ontological findings to create a catalogue of the system - siteless and scaleless modules that can partake independent of their relationship to the city they once belonged to. In this phase, we introduce narratives of Gilles Deleuze's Difference and Repetition, as well as the ideas of the Rhizome established by Deleuze and Guattari in their book A Thousand Plateaus: Capitalism and Schizophrenia, to help organize and narrate the new city fields. Deleuze and Guattari established six rhizomatic principles, they are the following: 1 and 2. Principles of connection and heterogeneity: "...any point of a rhizome can be connected to any other, and must be" 3. Principle of multiplicity: it is only when the multiple is effectively treated as a substantive, "multiplicity," that it ceases to have any relation to the One; 4. Principle of

asignifying rupture: a rhizome may be broken, but it will start up again on one of its old lines, or on new lines; 5 and 6. Principle of cartography and decalcomania: a rhizome is not amenable to any; it is a "map and not a tracing."[ii]

Taking Deleuze and Guattari's rhizome principles into account and applying them to the creation of new city fields of actions the following relationships can be formed. The city is an assemblage of multiple programs and agents operating in response to the different and often conflicting logics that take place in time but are interconnected under one physical manifestation - the surface of the city - Connection and Heterogeneity. Cities have within agglomerations of "very diverse acts, that include linguistic, perceptive, mimetic, gestural, and cognitive." These acts create a multiplicity of activities that do not relate to one another and no longer reinforce the idea that cities are for a singular use - Multiplicity. Cities have the ability to go beyond their boundaries by the gaps created - interruption; therefore, they able to extend beyond the political and economic limits that are already established by the top-down political culture and creates larger networks of regulations based on new social-spatial relationships - Asignifying Rupture. Cities as a surface, both singular and holey, can start to establish a standard of development and congested actions, creating a map that can be followed no matter the physical location. This cognitive and extemporaneous understanding of the space promotes interactions between agents and time, regardless of where you start or finish - Cartography. Thinking of cities and the fields as rhizomatic allow for each city to promote new reactions of networks that starts to identify and demonstrate its inherit interruptions that permits them to develop in an informal manner. (Figure3)

Taking all of this into account phases 1, 2, and 3, students take their projects from isolated sequences of city narratives and start to activate them as part of the field of interruptions. The urban topography, as a living and real organism, is created and this oscillation between design as thought and activation as physical starts to eradicate preconceived notions of the informal city. Furthermore, students begin to look at Rem Koolhaas, Charles Waldheim, and Paul Virilio narratives of the horizontal filed as an active place of extensiveness programming without the need for continuity and uniformity[iii]. It is here where the students fully understand that the unprogrammable and informal start to create opportunities for urban recognition, allowing the cities to be interrupted, yet unaffected. (Figure 4)

[i] Jane Jacobs, The Uses of Sidewalks: Contact," in *The Urban Design Reader*, ed. Michael Larice
[ii] Deleuze, Gilles and Felix Guattari, A Thousand Plateaus: Capitalism and Schizophrenia. Minneapolis: University of Minnesota Press, 1987, 7.
[iii] On Rem Koolhaas, "The Generic City," in *The Urban Designer Reader*, ed. Michael Larice and Elizabeth Macdonald. Great Britain: TJ International, LTD, Padstow, Cornwall, 2013. ON Charles Waldheim, *The Landscape Urbanism Reader*. New York: Princeton Architectural Press, NY, 2006. On Paul Virilio, "The Overexposed City," in The Lost Dimension, ed. Daniel Moshenberg. Semiotext, 1991

Border Crossing & Territorial Assemblages
Danelle Briscoe, University of Texas at Austin

"The man-horse assemblage…which causes the lengthening of the dagger and pike, and made the first infantry weapons, the morning star and the battle axe obsolete. The stirrup, in turn, occasioned a new figure of the man-horse assemblage, entailing a new type of lance and weapons: and this man horse-stirrup constellation is itself variable, and has different effects depending whether it is bound up with the general conditions of nomadism, or later readapted to the sedentary conditions of feudalism."[1]

In this popular reference to the man-horse assemblage, an emergent and nomadic entity springs from the specific nature of its assemblage (Horse + Mongolian warrior + stirrup + weapon/s). Although there is an explicit reference here to the stirrup in this example, what Deleuze is raising (and others such as Manuel Delanda) is that the assemblage gives us something new, an emergent condition resulting from the totality of the various parts and their modes of interaction. Thus, an assemblage is more than a mere sum of the parts - their outputs and effects entail their amplification through their relations. Its effects or expressions cannot be reduced down or credited to any one singular entity.[2]

A fourth year architecture design studio taught in 2017, under the title of *BORDER CROSSING/ territorial assemblages*, explored the notion of the 'assemblage' and equally the concept of 'territory' as set out by Gilles Deleuze and Felix Guattari in their much theorized book "A thousand Plateaus, Capitalism and Schizophrenia." Both territory and assemblage were used as a means to decipher specific local and emergent tendencies relating to chosen human/animal behavioral systems along the US/Mexico border.

This experiment broke from the more 'classical' studio themes in order to focus on general transferable skills of design practice alongside current socio-political global issues to do with territory. As well, this paper also documents how the studio challenged the physical design environment to a virtual one. Now that two years have passed since the shouts of "Build a wall" were heard politically, this paper demonstrates that a teacher's hunch on a topic can make studio work all the more relevant to academia and practice. The project is unusual in that it involves the idea of a changing scale—of enlarging the traditional boundaries of the discipline of architecture. To clarify, architecture I would say traditionally comprises building construction, urban design, and urban planning. The new task here involves articulating a new relationship between architecture and territorial planning—a relationship for architecture with larger scales of urban territories. This immediately raises a question that is central to to the question of whether the architect's field of practice should be extended now, in the beginning of the twenty-first century? What are the reasons, the goals, and the methods for bringing territorial scale into the sphere of an architect's work? In terms of the problematic (spatial and social) scales, architecture has traditionally corresponded to smaller scales: the scale of the body; the scale of a house, or of a family; and the local scale, or the scale of a neighborhood. Throughout its history, architecture also engaged with the

urban scale, or the city. By charging students to grapple with the metropolitan dimension, a fundamental new space that emerged in the 1950s, but at the same time focus on the scale of the human, or parts to whole established by the horse-man assemblage, means that the user is always in focus. The land in question for the project encompasses the once shifting borderline that divides El Paso from Juárez. This territory was disputed soon after the Treaty of 1848 specified the Rio Grande as an international boundary.[3] The international boundary between El Paso and Juárez was constituted in reality by an urban-scale landscape-engineering project, rather than by the symbolic sculptural object ceremonially embraced by the Presidents of the United States and Mexico at that time. The relationship of territorial limits to riverbed is the first thread to examine, depicted as unified—and static—vectors at the Chamizal ceremony. Such representation ignores a history of disjunction between natural barrier and theoretical boundary line that was well documented on the United States-Mexico border. Confronted with the unruly course of the Gila River, a regional waterway that designated an early portion of the international boundary, the studio project reconciles the futility of borderline efforts with poetic reflection and community based proposals.

The studio's territorial topic was both immediate in its journalistic notoriety (aka "build a political wall") and yet remote to the international students of the studio. The studio itself challenged any singular cultural legibility given the diversity of students at this university that come from Spain, Italy, China, France, Switzerland, Iran and England and often times a combination of nationalities. Their understanding of the context was driven solely from Google research and objective mapping.

Critical to this remoteness is that fact that half the semester is taught on-line while students are away on internships around the world. This studio model and process questions the notion of the traditional studio space in general in its attempt to utilize the virtual space so present in current practice.   As a way to further negotiate the teaching of practice, students process different scales of selected territorial assemblages along the border and articulate heterogeneous matter, systems and energies of each, particularly in the end that of the contested Chamizal Border space between Cuidad Juarez and El Paso. Bearing in mind that these landscapes and territories are never static, nor isolated, our analysis of 'territory' is an interconnected subset of larger and more expansive territories, measuring micro and macro systems that inform wider milieu relationships and effects - ecologies/ecosystems.

Footnotes:
1. 1980Gilles Deleuze & Felix Guattari "A Thousand Plateaus,Capitalism and Schizophrenia." Trans. Brian Massumi. London & New York: Continuum, 2004
2. ibid.
3. The earliest documented complaint is dated 1856 and described as an "anxious inquiry" to Hon. Caleb Cushin from a landowner in the Valley of El Paso, Reports of International Arbitral Awards, The Chamizal Case (Mexico, United States) June 15, 1911, Volume XI, United Nations, (2006), 329.

Applying Academics' HUNCHES into Reality V

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

Hands-On: Getting Dirty in Architectural Education
Dalibor Hlavacek, Czech Technical U. in Prague
Martin Cenek, Czech Technical U. in Prague

1. The Role of Design Studio in Architectural Education
How should the architectural education prepare students for the specific challenges of architectural practice? The design studio led by the authors on the (name of the school) is searching for such teaching methods that move the traditional model of studio-based teaching so as to prepare students for the increasing complexity and uncertainty of architectural practice.

The design studio should not be a mere training or instruction. One of the most important aspects of all the good schools of architecture - and in particular the studio - is that regardless of content or used approaches, they can instill in students a way of critical thinking. At the same time, an architecture school should try to look ahead to prepare the future architect for "possible futures" [1], which are not yet quite clear. We perceive sustainable architecture as one these "futures".

Method of educating the architect through the design studio has been developing over 200 years and is the foundation of forming a future architect. The student has to deal with solving problems which are growing in complexity and in the course of time he acquires the knowledge and skills necessary for the profession of an architect. The teacher does not come up with ready-made solutions, but by constructive criticism responds to the design that the students create on their own. This way of teaching greatly differentiates teaching of architecture from other disciplines, such as medicine, where students first observe standardized procedures to eventually learn to carry them out, on the basis of this observation.

2. Architectural Education in the Context of Holistic Approach
Architecture should represent a complex approach that is ecological and economic but also socially and culturally sustainable and is also fully capable of meeting aesthetic expectations of the society. In order for the design process at the architecture school to be able to meet these challenges, it must be criticized and thoroughly revised. We need a holistic approach with the involvement of a wide range of expertise ideally from the initial design phases, the so called integrated design. One of the paths to an integrated design and an effective way of integrating sustainable thinking into the architectural concept leads through projects in which a student or group of students is actively involved and obtains necessary feedback from partial or complete building of these projects.

The most demanding form of such projects are the so-called design-build projects. They resonate with the theories of American philosopher and reformer John Dewey, who considered physical experience as the basis of learning. He did not understand teaching as the transfer of already organized knowledge, but as the development of the student's experience gained by his own activity.

3. Brief History of Design Build Projects

In Canada and the United States, approximately thirty architecture schools offer different versions of design-build courses [2]. The best-known academic program is probably Rural Studio at Auburn University in Alabama. It was founded in 1993 by professors of architecture Samuel Mockbe and Dennis K. Ruth. They were disgusted with the culture of "starchitects" and wanted to put their beliefs into practice that everyone should have access to quality architecture. They introduced students to one of the poorest regions - Hale County, Alabama - to gain practical experience in designing and building for local low-income people. Mockbee was convinced that in order for architecture to make sense, it must have a strong ethical imperative and that architects should place great emphasis on the ecological and social qualities of the design. He wanted to replace the theoretical teaching of architecture with the so-called hands-on method, which included the completion of the architectural design into a real building. Over 25 years of its existence, Rural Studio has built over 150 projects. Emphasis is placed on the environmental aspects of design - recycling, re-use and transformation of existing elements and the use of local materials.

Rural Studio had its predecessors. The oldest continuous design-build course is the First Year Building Project at Yale School of Architecture. It was founded in 1966-67 by Charles W. Moore and Kent Bloomer as an alternative to traditional studio-based teaching. This course was founded in the context of student unrest in the 1960s, and by building for the poor Moore wanted to inspire the students to socially beneficial activities. In the introductory years of the program, students travelled to the rural region of Appalachia, where they built community centers, a recreation facility at the coal mining area, or a health facility for miners who suffered from so-called 'dusty lungs' disaese. By the end of the eighties, the program focused on affordable housing - since then, students have built a single family house every year in a selected community that faced economic problems. All this in cooperation with non-profit organizations such as Habitat for Humanity or Common Ground.

Practical approach to teaching was also advocated by Walter Gropius. In his statement from 1939 "Training the Architect" he emphasized that "the young architect of today needs to be trained practically in the use of tools and materials", rather than being chained to the "blood-less drawing board and the phantom of traditon" [2].

Significant and essential for these projects is that sustainability is one of their major topics, whether it concerns energy efficiency, the use of local or recycled materials, low-tech technologies or support for local communities. Thanks to these projects the frequently overused words of ecological and socially sustainable architecture are suddenly gaining their lost meaning.

4. Conclusion

The paper will show how we - teaching practitioners - try to connect theory and practice in the architecture school. We try to create an environment, where we integrate craft and creativity and above all, pass over to the students passion for architecture. We will present our student projects of various scales that have been realized under our leadership and show successes (and failures). Our goal is that the students connect theoretical knowledge with practice, acquire their own tangible experience and bring their design into real construction or large-scale models using real materials. It is essential that they are able to see the real consequences of their decisions and learn from these consequences. Getting dirty gets things done.

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Design-Build studio outcomes; researching potential vs practice

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Academic design-build programs offer a method of teaching that outperforms conventional architecture pedagogy in learning outcomes and transferable lessons that young designers can take with them into a profession that involves complexity and collaborative problem solving. That is a baseline assumption our university's community design center has operated under for fourteen years, an assumption based largely on academic writings on the subject of design-build, antidote, and personal experience. With hundreds of alumni of our program now practicing in the world we recently took the opportunity to question these assumptions through a school wide post-graduation survey tool that assesses outcomes of the design-build mode of education. Design-build in American universities has early roots in late nineteenth century programs such as Tuskegee Institute followed by Black Mountain College (1933-1957), influenced by affiliates of Bauhaus who moved to America after the closing of the school in Weimar Germany[1], as well as Yale's building project (founded in 1967, now the Jim Vlock First Year Building Project). Twenty-six years later Rural Studio was introduced in the rural south expanding on the social aims and scale of existing design build programs and in the process inspired a proliferation of design build studios across North American schools of Architecture[2]. While once viewed derisively by traditional academics as something akin to vocational training[3], currently there is broader agreement in the value of design build as an educational tool, as evidenced by the explosion of design-build offerings at schools of architecture[4]. While these design build programs focused on 'learning through making' vary greatly in their project scales, programs, sites, timeline, methods of delivery, research agendas, and just about any other conceivable category, most of them share core pedagogical aims[5]:

- Inform design through making
- Understand how to execute a project from sketch to reality
- Understand tolerance, material, and connections in a 1:1 scale
- Empower students by broadening their experience and skill set[6]
- Cultivate collaboration and communication as part of the design process
- Provide an introduction to professional practice issues such as: project planning, funding acquisition, clients, liability, and the physical realization of design products for use by actual users[7].

Design-build offers a way to shift educational paradigms beyond the Beaux Arts model to expand the classroom out into the world, expose students to the physical and material implications of what they draw, and engage with topics of social responsibility - expanding the scope and relevance of design. All together design build studios offer a radical break from traditional teaching methods that have caused us to rethink all aspects of the design studio framework and has provided the opportunity to be 'subversive leaders and teachers'[8] in the classroom as we shape the next generation of professionals.

At our program, these student focused aims of the design build studio have been combined with a desire to make design services accessible to those who have often been underserved by the profession. We live in a city which suffered a large flood in 2005 and endured subsequent years of planning meetings and charrettes which 14 years later have produced few tangible outcomes[9]. As frustrated community members and designers we've focused our energies on deeper, more collaborative forms of engagement in the design process, and on built outcomes - goals that we often address through design build studio model. Our pedagogy is grounded in the belief that design excellence and community engagement are not mutually exclusive. We believe an engaged design process can serve as a capacity and coalition builder and is essential for students to not only understand broader social, economic and policy issues that shape the built environment, but also the power they have as architects to address them[10]. This pedagogy also serves as an opportunity for students to understand that the technical design skills they are learning are only one set of expertise and that all parties to a project bring unique skills and expertise to bear. We see design-build studios not as replica of practice[11], but as a messy and ideal way to expose students to the ability of good design to positively shape place and conversations and as a way to expand their own social skills as they understand their agency and role in changing the built environment.

The value of this design build pedagogy on professional trajectories and community involvement from limited testimonials of former alumni offer insight to impact. Alumni have shared that they learned the importance of getting uncomfortable, gain valuable communication skills and understand the importance of the client/architect relationship. They also have shared that the project management and fabrication skills gained in design build studios helped them jump start their career by setting them apart in the initial job search. The introduction to alternative modes of practice led alumni to

recognize the potential of non-traditional career paths. It was these testimonials [12] that prompted and served as the foundation for our research question.

What is the impact of design/build pedagogy with an implicit commitment to engagement and equitable design process that reflects a socio-political and/or eco-cultural agenda on the next generation of professionals?

To consider these questions, we used mixed-methods research approach, conducting a web-based anonymous quantitative survey of 3,091 School of Architecture alumni. The survey takes an average of five to seven minutes to complete and totals 45 questions. These questions range from those focused on the role of design build education on career trajectories to assessment of confidence gained in studio and current community involvement. The survey includes open ended, likert scale, and closed questions. Key informant phone interviews will be conducted with those who self-select via the quantitative survey. This survey was initially sent via email to alumni listserv and continues to be promoted via the social media platforms (Facebook, Twitter, Instagram) of the School of Architecture and both a community design center and an independent program which lead the School's design build teaching efforts.

There are limitations to this methodology and survey implementation. The lack of pre-testing of the survey with a diverse population of alumni led to questions not capturing the experiences of retired alumni. Internet availability and usage variance may limit response due to the web-based modes of promotion and distribution. As well, the length of the survey limits our ability to clearly assess the impact of the engaged design process on civic participation post-graduation. The self-selection for key informant interviews may also lead to a positive impact bias.

As of February 14th, the quantitative survey was completed by 609 alumni and will continue to be promoted until March 30th with a goal of n=750. Initial data indicate relationships between design build pedagogy and willingness to take on leadership roles earlier in career paths, gender and design build studio experience, and agency to engage with social issues beyond. These represent only emerging areas and complete data analysis will be conducted at the close of the survey. Key informant interviews will also offer additional insight and nuance. In particular, these interviews provide an opportunity to assess impact of the School's differing design build pedagogies and shape the direction of curriculum moving forward.

There is continued importance in understanding the impact of design build education as faculty consider how to imagine new futures where craft, fabrication and speculation are connected with the development of individuals and growth of socially conscious designers. As well, our hope this research effort provides an opportunity to recognize that studios with contemporary agendas also offer invaluable professional skills transferable to practice.

We look forward to sharing the full results of this inquiry into the measured impacts of design build projects on students' education and professional and personal trajectories.

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[11] A critique of the common myths of academic design build can be found in Doyle, Shelby and Whitehead, Rob, "The Lore of Building Experience: Deconstructing Design-Build" (2017). Architecture Conference Proceedings and Presentations. 107.

[12] Alumni of our program were interviewed for a Featured Alumni Booklet published in 2018

Rethinking (Practice) Through Remaking

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Intro

We live in a world of constant change[1],that requires continuous adjustments for the process to either "stay the same" or to become something different. Change here becomes a set of interventions, whether in relation to things, systems, ideas or relationships, that span from adjustments within existing structures as well as dramatic transformations. As things break down, deteriorate or become obsolete, relationships become fragile, and systems outdated. Humans often aim to avoid these problems and return to their original state of being - to their usual way of living and habitual routines or trajectory. Avoiding more substantial transformations, and intending to continue as is, often without actually resolving the problems at hand, could be seen as an archetypal human response. But to stay as is, without experiencing any changes, is not feasible, either in the context of human life or the built environment. We have gained much knowledge over the past few decades about human psychology and the way in which people live, and it is well known that spatial environments influence our wellbeing. However, our practices of teaching and creating our built environments have not adapted in relation to this knowledge.

The Dichotomy of Practice

The word "practice" as it relates to design education, the act of creating and within the praxis of practice, has fragmented in meaning in the past 100 years and often changed

in meaning to the extent that a definition has stood in opposition to original definitions. By definition, a practice has repetitive, linear and customary processes that follow established and rigid patterns, unable to engage with a changing world. Arguably, a practice continues something that has already been established: something that is usually carried out and maintained in the same way. While developing a skill, the repetition of an act or a systematic training is essential in order to establish a craft and the understanding of material knowledge. The continuation of architectural styles, such as 20th-century modern architecture, can be detrimental for innovation.

Critic of Modern Architecture
"If design is merely an inducement to consume, then we must reject design; if architecture is merely the codifying of the bourgeois models of ownership and society, then we must reject architecture; if architecture and town planning are merely the formalization of present unjust social divisions, then we must reject town planning and its cities...until all design activities are aimed towards meeting primary needs. Until then, design must disappear. We can live without architecture."[2]
Adolfo Natalini, Superstudio 1971

Since the 20th century, the way in which architecture has been studied and theorized has been dominated by the notion of the new, as the most important factor when designing. Research and knowledge production have followed in this vein, and its methods have aligned with much research and theoretical inquiry based on the perception of best practice. However, learning practice overall, in the form of lectures and books, is often based on limited precedents - perspectives that are confined to geographical, cultural, climate-related and humanitarian viewpoints.   One example of this relates to the linear continuation of the modern religion outlined in *Precedence in Architecture*, by R Clark and M Pause. The publication showcases illustrations of 88 buildings, 68 of which are from the 20th century, and only 20 of which are from the pre-modern period with only one architect (and two buildings) not from Europe or the United States. The authors do not discuss these buildings in relation to philosophy or cultural studies, nor do they examine architecture in terms of the making process. Praising the aesthetic criteria of famous buildings without taking into consideration other qualities and factors provides limited analysis. Such shallow analysis is likely to have shaped the approaches of tens of thousands of educators and practitioners. The styles and architectural 'ISMs' of the past are usually analyzed within a periodization of western architectural history and lack an understanding of geographical, cultural, behavioral, and climatic factors, as well as various conceptual frameworks and practical concerns such as human comfort.

Learning to Embrace Uncertainty
Students and practitioners must have a willingness to argue against established protocols and if required break the rules once they have been understood. Arch theory, education and practice require the ability to rediscover spatial qualities that are beyond the visual. The usual methods of working and teaching must be questioned and broken from in order to build new theories and histories, with the human at its center. These new methods are also imperative in order to find renewed potential for the re-

imagination and the redesign of (existing) spaces and buildings. To achieve this, critical thinking is required that is self-directed, self-monitored and self-corrective. Students and designers should be able to connect their design processes with various other fields, such as history, philosophy and sociology.

Teaching for Successful Intelligence, by R.J. Sternberg, quotes that "Creativity arises out of the tension between the rules and imagination." It is from this tension that the student can process existing information while, at the same time, challenge any preconceived assumptions. Physical making, the ability to work with the material world, will also become a creative, productive and intellectual process of thinking. Nelson Goodman writes in Ways of Worldmaking that: the many stuffs - matter, energy, waves, phenomena - that worlds are made of, are made along with the world. But made from what? Not from nothing, after all, but from other worlds. "Worldmaking as we know it always starts from worlds already on hand; the making is a remaking.[3] Nothing exists for a first time, nothing is new, all making is remaking, appropriating, transforming, and therefore changing.[4]

Remaking and Repair in Practice and of Practice
As an alternative to the generation that is only concerned with the idea of the new within the practice of both teaching and learning, a focus on remaking and repairing of that which already exists, requires processes of deconstruction and reinterpretation. To find new meaning, form, and expression, looking at what already exists, in terms of its purpose and integrity, is part of this revised critical inquiry. The process of re-construction or re-making responds to the stories and questions of making, and through appropriation become relevant again. An attempt to re-think starts by turning around pre-conceptions, by changing perceptions of what might seem obvious, and instead investigating new potentials. The process of deconstruction is a process of taking something apart in order to understand its true form, the structure of things, and the relationship between things. As such it is an interpretive process. Re-construction stands in opposition to the idea of practice, for re-making means that you are not holding on to some lost past, but establishing continuity with the past. The effort is with re-interpretation and opening possibilities in artful divergence. Building versus un-building and constructing versus deconstructing - the words are closely related, not separable, yet understood as opposing forces.[5] Observing, reading, building and un-building are fundamental in the meaning and the act of creation, as well as in the essence of change. Pablo Picasso famously said: "Every act of creation is first an act of destruction" - this further opens up the importance of the undoing, underlining the process and creative act itself. Our educational environments and practices still very much divide students and faculty, putting them in categories that are based on old assumptions and practice, with a need to fit into a particular disciplinary group. To go against such divisions becomes a journey of self-discovery... a journey through our landscapes between art and design, and between the appropriation of what is already there and what we can offer. How is it possible to break from the disciplinary tradition, from the safety of the existing practice, or the defined academic and professional field? Through Creative Repair and Remaking, we were aiming to find the potential in things, the potential in Ideas, the potential in usage and the transformation of our world on

hand. Repair becomes an attempt to create an alternative continuity in the form of creative making, in the form of building community, in the form of making narratives, and in the form of Designing Change.

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Design-Build Nomenclature and the Production of Knowledge
Michael Hughes, American University of Sharjah

As design-build education has expanded rapidly over the last twenty years there is growing confusion within academia with regard to both the fundamental core tenants and the limits of the Design-Build pedagogical model. Twenty years ago William J. Carpenter's seminal *Learning by Building: Design and Construction in Architectural Education*, established a working definition for contemporary design-build coursework in architectural education by referencing relevant precedents such as the Yale Building Program and the Rural Studio to outline key characteristics common to the then nascent pedagogy. Carpenter's basic description highlighted construction, collaboration, and communication as the key differences between design-build classes and more conventional "representation-based pedagogy" in which students work individually with a professor in a design studio setting.[i]

When Carpenter was writing in 1997 there were only a handful of faculty and programs, less than a dozen in total, experimenting with construction in architectural education.[ii] These programs shared, to a large degree, commonalities related to project scope, class format and pedagogy. In contrast, in 2018 nearly every school of architecture in the United States has some type of full-scale learning component in the curriculum and the pedagogy has become more common in Europe and Australia. Despite this growth, and the increased differentiation between programs vis a vis project types and pedagogical approaches, the nomenclature has not evolved to keep pace with the evident variety.

Design-Build Evolves
The expanding field of project types and intellectual goals coincides with the rapid expansion in the number of design-build programs. As more schools offer courses and more faculty become involved the range of objectives and outcomes have evolved to include a broad range of research and methodologies. Today faculty operating nominally under the design-build nomenclature, or categorized as such on a superficial level, are often pursuing radically distinct agendas.

Even within individual schools or programs completed projects evidence divergent trajectories. For example, a close examination of projects completed at Auburn University's Rural Studio reveal a number of different directions explored since Samuel Mockbee established the program in 1993. Across twenty plus years the accumulated evidence shows that some projects privilege sustainability through material recycling or building reuse while others foreground material experimentation or low-cost housing. Some privilege poetic expression and experimentation, with results that exhibit what Andrew Freear "decries as 'shanty architecture', while others manifest precise detailing and craftsmanship.[iii] These dichotomies can be found in projects completed in the same time period as well as across the twenty-five year history of the Rural Studio and represent the variety of research interests foregrounded by different faculty as well as agendas championed by thesis teams. While all of the projects abide a similar organizational structure in terms of the number of students, scope, and duration the range of results belies any singular or narrow approach to design-build. Similarly, at the American University of Sharjah a rotating cast of six to eight faculty with differing skill-sets and capacities coexist within the Department of Architecture's Design Build Initiative. Supported by an extensive array of analog and digital fabrication equipment and courses distributed throughout the curriculum participating faculty pursue a broad range of issues. Some pursue more conventional furniture or installation projects featuring traditional materials and analog tools while others focus on a particular material, (sheet metal, fiber resin composites, wood), process, (casting, aggregate assembly, carving) or tool (CNC routers, 5-axis milling machines and waterjet cutters). Still others prioritize issues such as sustainability, housing, and landscape and yet they are all conventionally lumped together under the broad term "design-build."

Attempts at Codification

Presenters at the June 2016 "Hands On: Enhancing Architectural Education" Conference held at the Technical University Vienna represented a cross-section of subthemes loosely organized in three thematic sessions titled Learning through Making, Pubilc Interest Design: Collective Action and Social Engagement through Architectural Education, and Hands-On Education Beyond the Institution. While presentations in the Public Interest Design session coalesced around the subtheme of community engagement presentations in the other sessions lacked cohesion. One presentation clearly focused on digital fabrication was positioned next to work emphasizing cultural immersion in an unfamiliar context. Another focused on curricular development while others focused on social development.

The resulting juxtapositions led to a messy but revealing set of discussions. At one point during the discussion following Martin Self's presentation of the technologically advanced digital fabrication work happening in the Architectural Association's Hoake Park Design & Make program an audience member asked if the work had any broader social or community benefit. Professor Self explained that the AA program focused on applied research bracketed by digital fabrication and the existing timber resources in the Hoake Park managed forest. In response the audience member suggested that community engagement was fundamental to all design-build pedagogies and as such the Hoake Park work was not admissible.

In contrast, the October 2016 "Experiential Learning in Architecture and Environmental Design Education" Conference held in Lyon France featured a keynote address on design-build education by Bryan Mackay-Lyons, founder of the Ghost Architectural Laboratory in Canada. At the Ghost Lab Mackay-Lyons focuses on design build the act of making and the 'master builder tradition. All Ghost Lab projects occur on private property for a private client with no element of social outreach or community engagement.

These examples highlight the growing disparities and sub-currents within design-build pedagogy. Similar discussions within these conferences considered the validity of projects in terms formal or spatial quality, material and tectonic craft, and disciplinary innovation versus course objectives that highlight exposure to underrepresented communities, participatory processes, and social interactions between students and clients. As speakers, panelists and audience members expressed their preconceptions and biases they collectively exhibited the variety and pedagogical diversity now existing in design-build education.

Subthemes
In contrast to the evolving and expanding range of objectives and working methods evident in design-build pedagogy the nomenclature remains unchanged and largely inadequate. Equally, literature on the topic has tended to focus on the operational methods and resulting projects rather than an articulation of differing agendas, pedagogical goals or theoretical underpinnings that structure the work of specific design- build teachers and programs. A review of existing design-build programs reveals a diverse range of subthemes that have evolved over the past twenty years. These subthemes present an opportunity to unravel and identify the primary objectives guiding faculty. A review of existing literature including published articles, books and school websites reveal an initial list of nine subthemes. In addition to the most common format described in Carpenter's 1997 text, which we could call "Master Builder" (1), these subthemes include (2) Sustainability, (3) Material Experimentation, (4) Digital Fabrication, (5) Low-cost Housing, (6) Landscape, (7) Cultural Immersion, (8) Interiors and (9) Social Outreach and Community Engagement. While the majority of design-build programs evidence some combination of these subthemes the categories serve to expose the range of divergent, even contradictory agendas operating under the shared, imprecise nomenclature. While many design-build faculty maintain allegiance to material construction and the experiential teaching methods inspired by John Dewey's learn by doing ethos[iv], defaulting to a single description in reference to any project that includes a full-scale construction component risks oversimplification. By analogy, it would be difficult to describe the range of inquiry happening in hypothetical design studios without additional qualifiers: Comprehensive, Paperless, Speculative, Structures, Landscape, Urban, Tall Buildings, Form Finding, Scripting, Core, Distinguished Visiting Critic, Travel or Study Abroad, etc. The diversity evidenced by design-build practitioners today demands a similarly nuanced set of descriptors. (*Note: If this abstract is accepted the conference presentation and full paper would be

developed to include a description of each subtheme along with examples drawn from a wide range of schools.)

Conclusion
As the novelty wears off and the pedagogical model matures critical discourse needs to evolve in order to more precisely articulate and explain important distinctions within the design-build sub-discipline. Improvements in the quality of critical assessment are necessary to develop coherent operational theories, participate in ongoing debates in the field of education, and elevate the discourse such that design-build practitioners can more fully engage academic scholarship.

Without a coherent language design-build faculty risk being perceived as existing outside the norms of academic research. This otherness poses significant challenges for those seeking tenure and promotion at conventional research universities where design-build is often relegated to service or teaching rather than scholarship. Further, additional descriptive precision provides an opportunity to clarify, compare and differentiate intentions and outcomes.

Practice Based Research in the context of Spatial Transformation: A South African perspective
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The architectural profession has come under increasing criticism for not adequately responding to the socio-economic needs of the post-apartheid South African society. This presents both a challenge and an opportunity to architectural education, which has a critical role to play in igniting the spatial transformation of historically disadvantaged communities. Architectural education, not dissimilar to any professional education, strives to develop knowledge, skills and values that develop a professional holistically in order to continue the process of knowledge generation by way of practice in a lifelong continuum. The reality, however, is that formal professional education faces critical pedagogic disconnection with marginalised communities by not being able to adapt to the needs and aspirations of socio-economically diverse contexts. This paper asserts that the prevalent modes of architectural research and pedagogy are rooted in historical modes of knowledge production confined within the silos of academia, which is the primary cause of disconnection with society. Cret (1941) attributes the historical disconnection between practice and society to the academisation of architecture as a discipline during the Renaissance period, which separated art from craft; architectural practice shifted to a discipline-referenced profession, following the ideals of the court and the aristocracy. The close relation of architectural practice to the culture of making as effected by master craftsmen and master-builders, would thereby cease to exist. The perpetuation of disconnected teaching practice was epitomised by the socially disconnected ateliers of the Ecole des Beaux-Arts in France. These teaching practices generally continue to define the current approaches to architectural education at South African schools of architecture – based on the disciplinary confined studio and

the design jury. A critique of this system, however, requires an informed understanding of the broader approaches to curriculum and pedagogy that define contemporary higher education. Reference is made to Shubert (1997) who elaborated on the concept of the hidden curriculum whereby the social relationships between participants in learning, students, teachers and members of society alike, construct and refine the character of students. His four perspectives on curriculum aligned to character types, namely, social behaviourist, intellectual traditionalist, experientialist and critical reconstructionist provide a valuable framework for a critique of prevalent architectural teaching practice. The historical evolution of architectural education since the mid-17th century expresses a strong correlation with social behaviourism and intellectual traditionalism. The pedagogic mode of pupillage / apprenticeship training based on observation and mimicking the knowledge and skills of the master, typically relates to a social behaviourist perspective. This perspective can also be found in the pedagogic approaches of the Beaux-Arts which epitomised the architectural studio as a confined and controlled creative silo, disconnected from society. While external images of social success and the behavioural observation thereof would form the basis of the behaviourist approach, intellectual traditionalism, while not specific to behavioural observation, relied heavily on the great intellectual works located within the logic of disciplines; this exposed the learner to ideas that would transcend historic eras, geographic locality, culture, race, gender, and class among others. These two perspectives underpinned the evolution of education over centuries and clearly defined the most dominant discourses and approaches of architectural education in South Africa today. The Experientialist approach, on the other hand, poses an interesting and vitally valid challenge to the two preceding approaches by highlighting the importance of the broader learning context inclusive of practice experience, lived experience and informal learning. This approach embraces diversity and multiculturalism by placing high value on contextually situated problems, practice and shared experiences. Educational philosopher, John Dewey, promulgated such an engaged learning paradigm founded on real life experiences and consequently criticised schooling for being exaggerated rather than supplementary to the ordinary course of living (Dewey and Dewey 1915). The paper further elaborates on the democratisation of knowledge creation by referring to Dewey's (1938) assertion that democratic forms of social life improve access and participation, thereby advancing the quality of human experience. Most students at universities, however, do not generally have adequate practice experience in architecture and therefore rely on the curriculum and pedagogic approaches of their schools to define their future graduate attributes; they are vulnerable to exaggerated forms of schooling within the silos of academia. This paper argues that academics should have constant engagement with the practice of architecture in order to stimulate critical knowledge transfer to society via praxis-led research and ethical social practice. With respect to research output, academics in professional practice would therefore be best suited to promote praxis-led research, situated problem based research and knowledge generation through practice. The discussion proceeds to critique the predominant modes of knowledge production in contemporary society. Gibbons et al (1994) defined two modes of knowledge production widely referenced in higher education. The paper takes a critical stance against the dominant discipline-specific Mode 1 type of knowledge that hinges around scientific methodology, norms and

judgement of what constitutes sound practice – controlled within institutions of learning and research. Mode 2, on the other hand provides a responsive framework spatial transformation as it accommodates trans-disciplinary practice, heterogeneity and transience; it is not bound within institutions, bringing a wider range of participants into the process of inquiry. Mode 2 recognises the value of practitioners as vital to critical pedagogic practice rooted in context and interdisciplinary collaboration. Within this paradigm of practice-led teaching and research, knowledge transfer and knowledge production may be considered dialogical through synergies with society, whereby knowledge transfer and knowledge generation are interdependent processes between academia and society. In this way spatial transformation may be realised through a process of collaborative practice within a diverse knowledge community.

The research approach is informed by a problem which focuses on the critical role of education within diverse social contexts for the advancement of society –spatial transformation. The research strategy is therefore based on a qualitative approach in the interpretation of data collected from primary and secondary sources. Primary data is sourced from auto-ethnographic inquiry due to the author's own experience as an academic in professional practice and who lived through the geographic and socio-economic segregation effected by apartheid legislation. Secondary data analysis is via literature review of critical discourses on the role of education and practice for the advancement of an inclusive knowledge society for socio-economic redress and spatial transformation.

The architectural profession has come under increasing criticism for not adequately responding to the socio-economic needs of the post-apartheid South African society. This presents both a challenge and an opportunity to architectural education, which has a critical role to play in igniting the spatial transformation of historically disadvantaged communities. Architectural education, not dissimilar to any professional education, strives to develop knowledge, skills and values that develop a professional holistically in order to continue the process of knowledge generation by way of practice in a lifelong continuum. The reality, however, is that formal professional education faces critical pedagogic disconnection with marginalised communities by not being able to adapt to the needs and aspirations of socio-economically diverse contexts. This paper asserts that the prevalent modes of architectural research and pedagogy are rooted in historical modes of knowledge production confined within the silos of academia, which is the primary cause of disconnection with society. Cret (1941) attributes the historical disconnection between practice and society to the academisation of architecture as a discipline during the Renaissance period, which separated art from craft; architectural practice shifted to a discipline-referenced profession, following the ideals of the court and the aristocracy. The close relation of architectural practice to the culture of making as effected by master craftsmen and master-builders, would thereby cease to exist. The perpetuation of disconnected teaching practice was epitomised by the socially disconnected ateliers of the Ecole des Beaux-Arts in France. These teaching practices generally continue to define the current approaches to architectural education at South African schools of architecture – based on the disciplinary confined studio and the design jury. A critique of this system, however, requires an informed understanding of the broader approaches to curriculum and pedagogy that define contemporary higher

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The HUNCH and Architectural Pedagogies VII

Saturday, March 30, 2019
11:00-12:30

Precedent-Based Learning: An Approach for Studio Pedagogy in the Early Years
Omer Akin, Carnegie Mellon University

Precedent-Based learning is related to a very old method of teaching, particularly in the studio setting. Usually it takes the form of precedent analysis. An empirical study was conducted in order to better understand how experienced designers use precedents in the course of a brief design session. Normative theories of learning suggest that success is most likely to be achieved when students learn (1) the principles governing events or phenomenon in a discipline, and (2) ways of applying these principles to specific situations to solve problems of various kinds. We call this the didactic method. In the didactic approach there is a systematic representation of the fundamental principles of knowledge that identify a specific domain upon which a corpus of applications or problem solving skills can be constructed.   For example, once students understand the Theory of Thermodynamics, then they are able to apply its principles in different problem contexts demonstrating a command of the knowledge of the sub-discipline of dynamics in Physics. Likewise, the Pythagorean Theorem in Trigonometry explains immutable relationships between geometric elements of a right triangle. These relationships help scientists and designers alike to configure complex forms with precision. When such a theory is altered or replaced by a new theory, the educational approach uses the new in place of the old. First principles occupy the driving seat in fields where such generalizable rules abound. Most academic disciplines, particularly the traditional ones, use a didactic approach.   In fields that deal with professional practice, for example design, instruction appears to deviate from this pattern in significant ways. Students are rarely given robust principles (ones that hold in different contexts), let alone immutable ones, upon which they can construct designs that can be judged unequivocally or without error. Instead they are given plenty of precedents from which to learn a variety of heuristics. This type of knowledge is fundamentally tacit, situated in a context of extra-domain information, and involving pedagogy that is principally experiential.   In architectural curricula, the experiential approach to learning is omnipresent. Descriptions of design instruction, or for that matter, architectural curricula within which such instruction is found, are invariably of an indirect kind. They describe the stylistic or formal attributes of the architecture that is promoted by the particular pedagogy in order to explain its characteristics, principles and techniques.

Working with Architectural References: Deformation as Lawful Inscription of Knowledge

Kim Helmersen, ETH Zürich
Jan Silberberger, ETH Zürich

The paper at hand bases on an ethnographic study on the teaching practices at the architecture departments of four leading European Universities. In particular, the paper will present and discuss data that has been gathered during the observation of a master degree course at a chair of architectural design, rebuilding and conservation.

Within this course, students had been faced with the task of converting an abandoned inner city bank building that had been constructed in the 1950ies: the assignment had been to invent new types of use while keeping as much as possible of the existing structure. In order to solve this problem, each student group had been directed to select an architectural reference (a building) that guided them in developing their own rebuilding project. While drawing (loosely) on reference projects can obviously be considered a very common process in architecture - within our fieldwork we have observed countless instances, in which either professors or students mentioned certain buildings as 'sources of inspiration' - students in our case had been required to use their references in a much more rigid manner, that is, as a pool of indications, constraints and even instructions for the unfolding of their projects.

In practical terms, this meant that students had to conduct a thorough analysis of the given bank building (in order to identify, for instance, its support structure, the materials used or certain stylistic characteristics) as well as of the surrounding neighbourhood (in order to get a feel for, e.g., its density of structures and people, its atmosphere, and the uses it provides). On this basis, students had been asked to come up with new, plausible ways of using the bank building - for instance, as a luxury department store - and to select a corresponding small set of architectural references - e.g., Harrods or Rem Koolhaas' Prada Store. These references had been selected in a rather 'intuitive' manner (we may say that they had been primarily the result of an 'aesthetic judgement' and not the outcome of a rational choice process). Nevertheless, they often represented something like best practice examples as they frequently concerned buildings that perform particularly well. In a next step, the existing building and each of the references had been thrown together in a 'quick-and-dirty' way. Using the image processing software "Photoshop" to combine photos of the existing building with adequate photo material of the reference, students created digital image material that is reminiscent of the cut-and-paste imagery of 1980ies punk rock fanzines - in terms of both, its rough, sloppy 'look and feel' as well as its extremely fast and rather effortless creation: the edges of the two images put together had been left untreated (students did not take the trouble to smooth or blur them), which means that the act of assembling remained clearly visible. In this sense the procedure is evocative of the technique of montage as described by Deleuze (1986). Referring to Deleuze (1986), who elaborates on the montage as a method to explore the relations that make up our complex world, we would argue that the approach taken by the students creates a consciousness for the relations that might circumscribe and define their design proposal.

While this method of montage relies to a large extent on tacit knowledge, which makes it difficult - some would say impossible - to pinpoint the reasons or rationale respectively for the decisions taken (Hill 2006), the next methodological step - the actual conflation of reference and existing building - is characterized by a course of action that is guided by logical, rational decision making. In the course of this conflation, the reference, which is literally taken out of its context and forcefully put into the context that is defined by the existing building and (maybe to a lesser extent) its surrounding neighbourhood undergoes substantial modifications. These modifications in turn are the result of a set of clearly defined constraints. If we, for instance, assume that the existing building and the reference have different support structures, then the reference in order to adapt to this context variable is tweaked in a highly deliberate manner. The transfer of the existing building's support structure to the reference may then require further changes, that is, adaptations of additional design parameters. Yet, all these (necessary) deformations of the reference constitute lawful, well-informed inscriptions of knowledge since they are all based on the thorough (and communicable) interpretation of the reference's new context. In this way, the reference loses its ideal type character and is deformed into something new, something site-specific.

When explaining their way of working with architectural references, staff at the chair of architectural design, rebuilding and conservation sometimes referred to appropriation art stating that they, in the same spirit as appropriation artists, use pre-existing objects to which they apply a set of transformations (in contrast to appropriation artists, who usually apply rather slight transformations) thereby making them their own.

 At this moment, the chair of architectural design, rebuilding and conservation is in the final stages of preparing a draft for a major publication with regard to their teaching methods. As it stands, the way of working with references described above will not be part of that publication. That is why we as external observers decided to provide an account of this procedure. We would argue that the described mode of operation constitutes a hunch that has already been deployed to a certain degree. The chair's staff is already convinced that, using the phrasing of the "2019 Teachers Conference", the described method is "lucrative" since it has already been "consistently pursued across a series of projects" with promising results. In this sense, the paper we propose is to be seen as an external interpretation of one of the chair's key principles in teaching. While we, as ethnographers, cannot say much with regard to the formation and early exploration of the respective hunch, we aim at providing a description that helps to shift the partially developed hunch to the level of research topic "to be subjected to peer review".

References
Deleuze, G. (1986). *Cinema 1: The Movement-Image*. Minneapolis: University of Minnesota Press.
Hill, J. (2006). Drawing research. *The Journal of Architecture*, 11 (3), 329-333.

Architectural Exhibitions: The Disciplinary Edge?

Ellen Donnelly, University of Nebraska-Lincoln

This research paper examines the role of the gallery in schools of architecture and design, and how their outputs—architectural exhibitions—shape pedagogy, the architecture discipline, and practice more broadly.

Architectural exhibitions have proliferated during the 20th century and are becoming the primary driver of architectural discourse. As historian, critic and curator Sylvia Lavin explains, the recent "shift in focus from the image of the architect as recipient of work [buildings] to the image of the architect as giver of opportunity to show work (in the form of access to gallery space) reflects the degree to which exhibition culture is not only increasingly central to architecture but is an increasingly pivotal force in defining architecture itself."[1] Lavin traces the development of architecture exhibitions during the 20th century, defining their changing role from documentary, to experiential to communicative systems that shape the trajectory of architecture culture. Architectural exhibitions have become an end in themselves - instead of trying to represent existing buildings through drawings, photographs and models, the exhibition becomes the site of architectural production. As Mirko Zardini, Director of the Canadian Center for Architecture notes, the architecture gallery serves "as a producer, instigator and disseminator of discourse," through exhibiting work, organizing public programs including lectures and panel discussions and produce publications.[2]

In museums and private galleries, exhibitions are required to reach the general public in addition to professional architects, academic architects and members of the art world. In this context, exhibitions serve "to reflect on current dilemmas, to provoke inquiry and debate, and to determine architecture and design's implications for everyday life."[3] Galleries in schools of architecture have the advantage of primarily catering toward individuals - students and faculty - with a high level of fluency within the field of architecture, enabling exhibitions to avoid didactic formats and instead focus on contemporary disciplinary questions. This has enabled academic galleries to become sites of experimentation which encourage innovative thinking and promote active design-research agendas. The Architectural Association exhibition program, initiated by Alvin Boyarsky in the early 1970s exemplifies the potentials for a reciprocal relationship between teaching and exhibitionary practice.[4]

Using Boyarksy's AA as a starting point, this paper will position architectural exhibitions as sites of urge and fascination which enable their creators (curators, designers, teachers) to pursue a hunch much in the same way a studio instructor pursues a hunch. As such, exhibition production (practice) will be considered as a pedagogical design tool which fosters craft and speculation, skill and imagination, an criticality and creativity, resulting in an active form of research which advances architectural discourse.

In additional to the exhibition program at the AA, a critical analysis of the exhibition and publications program at the Graduate School of Design (GSD) at Harvard University, and the gallery at the Southern California Institute of Architecture (SCI-Arc), will

illuminate the exhibition practice-pedagogy relationship. Starting with the self described goals of each institution—the gallery at the GSD "works to translate and present the school's design research and pedagogy through exhibitions...to fuel the global discourse on design and articulate the School's commitment to design as an ongoing practice rather than a fixed body of facts and principles," and the gallery at SCI-Arc "allows exhibitors to experiment with new materials, concepts, and fabrication method...the SCI-Arc Gallery aims to exhibit work that provokes critical discussions of current building practices," —this paper will explore the relationship between exhibitionary practices and evolutions in design pedagogy.[5][6] Through these precedent studies, it will argue that exhibitionary practices should be understood as an integral element to architectural pedagogy as they create space to advance the teacher's hunch, structure a space for exploration, and disseminate research while enabling discourse.

[1] Sylvia Lavin. "Just What is it that Makes Today's Architectural Exhibitions So Different, So Appealing?" in *As seen: exhibitions that made architecture and design history* by Zoe Ryan (New Haven: Yale University Press, 2017).
[2] Canadian Center for Architecture, "About." Accessed 6 October 2018. https://www.cca.qc.ca/en/about
[3] Zoë Ryan. "Taking Positions: An Incomplete History of Architecture and Design Exhibitions," in *As seen: exhibitions that made architecture and design history* (New Haven: Yale University Press, 2017).
[4] Irene Sunwoo. "We fight the battle with the drawings on the walls: Exhibiting Architecture at the Architectural Association," in *Exhibiting Architecture: A Paradox?*, eds. Eeva-Liisa Pelkonen, Carson Chan and David Tasman (New Haven: Yale University Press, 2015).
[5] Harvard University, Graduate School of Design, "Visual Narratives: A Showcase for Design" accessed 6 October 2018, http://campaign.gsd.harvard.edu/stories/showcase-for-design/
[6] SCI-Arc Galleries. Accessed 10 October 2018. https://sciarc.edu/institution/facility/galleries

Earth on Display: The Anthropocene in the Natural History Museum
       Rania Ghosn, Massachusetts Institute of Technology

Objects, cabinets, remains: here is an assembling of wonders from a damaged planet, brought together in order to cultivate the arts of remembering effectively, so as to care seriously, to care for, to care with. Each essay is a provocation to curiosity in the sense of incitement to feel, know, care, and respond. - Donna Haraway

To live in an epoch that is shaped by extensive environmental transformations is to be confronted with risks and uncertainties at a planetary scale. A large number of scientific research and images have communicated the impacts of climate change. On graph after graph, metric after metric — carbon dioxide in the atmosphere, population growth, species extinction, particulate matter in the air — the rate of change is what we refer to as the "great acceleration." Paradoxically, while the threats are serious, we remain little mobilized in part maybe because of the challenges to relate to and make sense of a story that is both difficult to tell and hear. Climate change is not only as a crisis of the physical environment but also as a crisis of the cultural environment - of fake news, lobbyists and entire systems of representation of Nature in their vast scales of time and space.

In response, humanities scholars, philosophers, curators, artists and architects have pointed to the potential of aesthetics to communicate the matter concerns of the climate crisis. According to geographer Mike Hulme, artists and cultural mediators have an important role to play in representing climate change. Hulme proposes that institutions and artists work with "the idea of climate change - the matrix of ideological functions, power relations, cultural discourses and material flows that climate change reveals as both a magnifying glass and as a mirror."[i] For people to make sense of the impacts of climate change what is needed is a renewed media strategy, which, rather than adding to representations of acceleration, respond to the "slow violence" of the environmental crisis in a form of "slow media" that assembles the Earth. How can we convert into image and narrative the disasters that are slow moving and long in the making?, asks Rob Nixon.[ii]

The museums of natural history could play a potentially important role in the communication of climate change. In the nineteenth century, museums of Nature captured the public imagination and gave visitors an appreciation of the scales and sciences of the Earth, for both scientific curiosity and popular entertainment. The historian Dipesh Chakrabarty has made the striking observation that the arrival of the Anthropocene means that human history and geological history have converged, calling into question nature and "natural history."[iii] So how does the Anthropocene enter the museum of natural history? Some museums have begun to introduce the Anthropocene in their programming. Such exhibits however have had less of a hold on the visitors' imagination than that of some fantastic displays in other wings of the museum.

This paper overviews the pedagogy of Earth on Display, an architectural workshop that seeks to bring climate change to broader publics by intervening in the climate change gallery in a museum of natural history. The course springs from the conviction that climate change demands urgent transformations in the ways we sense, imagine, care for, and design the Earth. It addresses some of these questions: How can climate change be imagined, spatialized, experienced, and made public? Where do designers and cultural mediators stand in relation to the poverty of the environmental imagination at a time when climate change skeptics have such influence on public opinion? How could architects mediate and exhibit something as unimaginable as climate change and the planetary scales that it engages? Beyond a series of digital screens and a language of gilt and techno-fixes, what artifacts of evidence -forms of knowledge and material evidence- can be channeled? What are the representational worlds -the Anthropocene "cabinet of curiosities" and "wonders"-that make the concerns of climate change legible, knowable, sense-able, and actionable to broader publics?

The conceptual framework of the workshop accepted Bruno Latour's invitation to experiment with political arts that speak to climate change-through exhibits, artifacts, theater, often with a touch of humor - such as in his tragi-comedy *Gaia Global Circus*. Throughout the semester, we discussed precedents that engaged aesthetics and climate (change) to identify affective strategies that respond to the wicked problem of climate change. The work of artist Mark Dion was very informative insofar as it appropriates and subverts established conventions of museum display-devices of

wonder" -diorama, taxidermy, cabinets of wonder, in order to think critically about the museum. Other important precedents included Olafur Eliasson's "Ice Watch" and "Weather Project" and Amy Balkin's *A People's Archive of Sinking and Melting*, which is a collection of materials contributed by people living in places that may disappear because of the combined physical, political, and economic impacts of climate change, primarily sea level rise, erosion, desertification, and glacial melting.   The design workshop was offered with generous advice and assistance from curatorial and program staff at the Harvard Museum of Natural History (HMNH) and its three earth sciences museums-the Museum of Comparative Zoology, the Mineralogical & Geological Museum, and the Harvard University Herbaria. Over the semester, students produced [1] on-site installation at the Harvard Museum of Natural History and [2] an exhibition catalog that documents the conceptual, methodological, and representational inquiry of the course. For the installation, each student chose from the HMNH collections one Anthropocene specimen through which they could make visible changes at planetary-scale. Then, each student or team drew a 140cmx70cm section axonometric diorama drawing that situates the Anthropocene Specimen in its site of transformation and that to construct the landscape and story of anthropogenic environmental transformations. The class designed together a folding screen installation, which unfolds the panorama of environmental transformations: sand extraction, deforestation, nuclear disasters, disappearing seas, etc. The pop-up exhibit was up at HMNH over a weekend.   If there is one emotional register that unites these dioramas, it is concern bound intimately to care, as feminist philosophers argue. "Caring," Donna Haraway suggests, means becoming subject to the unsettling obligation of curiosity, which requires knowing more at the end of the day than at the beginning.[iv] They call for experimentation with affective aesthetic strategies that call on the public's capacity to care: the capacity to be affected by the world.

[i] Mike Hulme, *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity* (Cambridge University Press, 2009), 362-63.
[ii] Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2011).
[iii] Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry*, vol. 35, no. 2 (Winter 2009): 197-222.
[iv] Donna Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2007), 36.

The HUNCH and Architectural Pedagogies VIII

Saturday, March 30, 2019
11:00-12:30

The Death of the Desk Crit

Malini Srivastava, North Dakota State University
Mike Christenson, University of Minnesota
John Barton, Stanford University

Summary.
This paper describes three alternative architectural studio teaching models taught by the authors at the University of Minnesota and at Stanford University. The three models attempt to build independent and collaborative capacity in students and to emphasize iterative components of the design process. Collectively, the models reflect the authors' shared conviction that studio education is quite pliable and available to a wide variety of changes in approach and methods. The first model, Harkness System, is a student-centered, discussion-based pedagogy developed at the Phillips Exeter Academy. Begun in 1931, this approach relies on carefully curated homework assignments followed by student-driven and student-led discussion with minimal instructor input during class. In fact the teacher gives up his/her authority and sits as an equal. Through discussion students collaboratively curate their own knowledge. Further they discover that learning is a social process: they can develop an authentic voice and develop both listening skills and empathy. From an instructor point of view it can be bewildering at first. To be largely silent during class challenges prevailing assumptions of what it is to be a teacher. But that silence is crucial as stepping into the conversation will hinder its progress and reassert the latent authority of the teacher. However the teacher is hardly passive. He or she is actively listening to the conversation, gauging who is speaking and who is holding back. They must carefully monitor their own reactions to new ideas and provocations, and treat all students with dignity regardless of their stated positions or their level of participation (high or low). The teacher must also accept mistakes, and a messiness of process. More directly the teacher must give into the fact that he or she is not in control. The students will take the conversation where they want it to go and some days will be better than others. Harkness teaching is hard work. In a Harkness architecture studio this all applies. Desk crits are eschewed in favor of small or large group discussions in which the students drive topic and process. Final juries are converted to discussions as well with invited guests taking part as equals rather then as learned elders. The second model, Exchanges in the Thick Middle, seeks to minimize the traditional linear quality of architectural design pedagogy. The approach aims at removing the "beginnings" and "endings" of design processes, characterizing them instead as cyclical exchanges between the highly specific and the highly fluid. In traditional approaches, design pedagogy tends to move conditions from disordered to ordered, or from fluid to fixed, or from large-scale to small-scale. In the pedagogy of the thick middle, architectural design processes are emphasized as capable of cycling between different kinds of order, different forms of order, different scales of order, or different degrees of order. Thus, design operates without obviously increasing or

decreasing the order of found conditions: it is positioned as an act of re-organizing rather than an act of resolving. Project reviews serve a distinct purpose in this pedagogy. Traditional juried reviews are not conducted. Instead, the review becomes an opportunity to place material in front of an audience in a way which invites the audience to creatively respond to the work. The creative response is embodied in the tactic of project exchange, in which each student assumes ownership of another student's project; the new project thus becomes their responsibility to develop -- until the next exchange. In this way, the "beginning" and "ending" of the project are blurred, and what emerges instead is a continuous process of iteration and negotiation, in which conflicting viewpoints are brought to bear on a never-fully-settled body of material. The third model, Shifting Allegiances/Shared Authorship, asks the students to consider all the work produced in the studio as being held in shared authorship. The studio cycles between individual development of artifacts, periodic sharing and display of the studio work as a whole, outlining common terminology to identify and categorize the studio work into thematic categories, and then asking students to select and develop any of the emerging themes as their focus until the next cycle, marking a milestone event where allegiances to projects or groups might shift. The studio privileges any prior development of the theme as existing context for the student(s) inheriting or choosing to move forward with any of the shared work. While the overall structure of the studio in terms of learning objectives, milestones, and core competencies is pre-determined and provided by the instructor at the beginning, the week-to-week specifics are determined through large-group studio discussion and shaped by the emerging thematic ideas. At any given time, one or more students self-organize into sub-groups around particular themes. These sub-groups shift allegiances or reorganize at the milestone events: some students choose to stay with a thematic idea that they were working on, while others choose to advance thematic ideas that had been previously developed by others. While the instructor asks the students to have individual authorship of artifacts, the students in the sub-groups determine the research, artifacts, and tools needed to develop the concept and educate others in the studio. The majority of in-studio time is spent in discussion in small and large groups rather than at desks. The major discussion themes are (1) a clear definition of thematic concept and (2) what needs to be researched, made, and analyzed in order to investigate the theme. Discussions incorporate comparisons and critique of work and consideration of tools and competencies needed, shared, and taught in order to meet the studio's learning goals. Periodic reviews of studio work with external reviewers adds new voices to the large-group discussion. During reviews, multiple students in various permutations and combinations present various themes and reference various artifacts from different works. The focus of discussion at the review is on negotiating various readings of the work and its potential for future development rather than the authorship behind the work.

Commonalities.
In support of their shared goals of improving independent and collaborative capacity and emphasizing iterative components of the design process, the three models share some structural similarities. For example, all three models bypass the traditional presenter-jury-silent audience layout, replacing it with a group discussion where the

students, instructor, and external reviewers participate equally and students lead the discussion around thematic ideas, referencing not just their own projects but the work of others, and of the studio as a whole. Though reviewers bring expertise and new points of view to the discussion, theirs is not the only voice heard. Instead of enabling a silent, uninterested, background audience, all students are expected to be actively engaged throughout the review. The three models address the studio's spatial configuration in a similar spirit: due to the substitution of group discussion for traditional desk crits, the studio needs to accommodate the continuous and highly present display of work-in-progress: the emphasis is on a shared effort rather than individual artifacts that disappear in piles on individual students' desks. The need for discussion space suited to small-group discussion and large-group discussion suggests that the students be spatially dispersed configured around a shared meeting, pin-up, and display space such that any discussion (and the work under discussion) is available to all of the students at any given time. In addition to structural similarities, the three models share the expectation that students will teach each other, whether through student-led discussion or through the negotiation necessary to exchange projects or to develop allegiances. In the case of the two models that expect a degree of shared or collaborative ownership of projects -- specifically the Thick Middle and Shifting Allegiances models -- assessment is done on a per-artifact basis: each artifact related to a project, such as a drawing or a model, is credited to the student who created it, irrespective of the ultimate origin of the argument or idea being tested in the artifact. Students submit whatever artifacts that they have authored themselves to a shared drive on a regular schedule (usually weekly).

Differences.
Studios based on each of the three models are currently taught at different levels at two different universities. The Harkness studio is focused on cohorts of students who may be either Architecture or non-Architecture majors and is offered as a first Architecture Foundation Design studio. The Shifting Allegiance studio is taught at the graduate level during the final or penultimate year before graduation, where literature research and competency development with advanced measurement tools (such as parametric energy modeling) are intrinsic parts of the coursework. The Thick Middle studio operates convincingly at the undergraduate level but with some difficulties at the graduate level, where individual competency and individual research focus are, for curricular reasons, expected to take on an increasingly central role.

Conclusion.
The three instructors responsible for designing and implementing the three studio models discussed here are working toward measurements of studio outcomes, greater integration and sharing of curricular approaches. Wider input is sought as a means of contextualizing the work, and possibly as a means of proposing additional or hybridized approaches.

Rethinking the Crit
        Miriam Dunn, University of Limerick

Mark Price, University College Dublin
Maureen O Connor, Cork Institute of Technology
Patrick Flynn, Technological University Dublin

The 'crit', short for 'criticism', is an assessment practice central to the education of architecture students. It aims to foster a culture of learning and reflective practice as described by Schon (1983), so the student gains agency over their education. We have re-examined several assumptions about this method of education, and through action research outline how a more reflective, student-centred, intrinsically motivated education is possible.

What is the 'crit'?
The 'crit' system began in the 19th Century Beaux-Arts where the model led to juries of tutors assessing students' work behind closed doors, this 'closed jury' system (Anthony 1991) became an 'open jury' in the 20th century, where tutors commented on work in public in front of students, so that all could learn together. 'The crit should be .. providing the student with encouragement as well as stimulus to continue exploration..' (Anthony 1991). In this format all students hear feedback on each student's project, in order to learn about their own work.

What is happening in practice?
Reyner Banham's essay, A Black Box: The Secret Profession of Architecture (1996) compares this teaching method to a tribal long house, and argues that in practice the ideal of inclusion into a new society of equal learning is replaced with enforcing a code of conduct, establishing attitudes and values that are then played out in the profession. Students absorb aesthetic, motivational, and ethical practices as well as language and even dress (Dutton 1991) - broadly speaking what Bourdieu (1990) refers to as habitus i.e. embodied manners of seeing, acting and thinking. Stevens (1998) expands on the roles that tutors and students act out. Students may regard the tutor's approval as indicative of approval by other powerful groups in society on which they are dependent for status and earning capacity.   It places the tutor as the person knows 'the' correct solution to every difficulty in the 'crit' process with the crit seen to endorse 'acceptable knowledge' (Dutton 1991). In addition to increasing stress and inhibiting learning, which may impact more depending on gender and ethnicity, the adversarial structure of the 'crit' reinforces power imbalances and thereby ultimately contributes to the reproduction of dominant cultural paradigms.

So what can we do to address this?
Assessment in architecture schools has traditionally adopted a 'one size fits all' approach by using the 'crit'. It traditionally focuses on verbal feedback with little or no space for collaborative learning. Our new feedback system attempted to be cognisant of the different design stages and aimed to provide a more student centred approach to feedback. Based on Anthony's *Design Juries on Trial* (1991) and Mc.Carthy's *Redesigning the Crit* (2011) we developed the aims of the new feedback.

Piloting an alternative approach to assessment - action research.

In the last academic year we ran a pilot model, delivered in collaboration with colleagues, where third year architecture students in one school of architecture were taught and assessed for a full year without a traditional 'crit'. The new model has four distinct stages designed to support the student through the design process.

1) Round Table Review: For the first stage using the Harkness (Barton 2016) method the tutors sat alongside the students in groups of six to discuss and, crucially, draw different approaches to designing their scheme. The emphasis was on the group's collective knowledge, so students and staff drew and spoke as equals in the learning process.

2) Submission: Closed Juries & Open Feedback. The second stage used feedback as a reflective tool. Students were given a deadline to submit work, which was subsequently reviewed by tutors, and they provided both marks and written feedback at this stage. These were issued to students in private and then had time to reflect, and then the students met individually with tutors to discuss the feedback. (Cameron 2014, Anthony 1991).

3) Online Learning : In the third stage the student's work was presented in a virtual environment. Students were asked to upload their project to an online community in groups of ten made up of the students, staff and external practitioners. Comments were invited and the online learning provided for greater debate and ensured it was not bound by a specific time and place. The students then summarised the online comments along with their drawings in a presentation. The crit was a discussion where the feedback has already been given and was used as a chance for the student to engage in a conversation, reducing asymmetrical relations of power. (Dutton 1991).

4) Selection of Final Work for Discussion: The fourth and final stage is a celebration of completed project work. Based on Cameron (2014) & Parnell and Sara (2000) approach students and staff viewed an exhibition of all the students' work and were invited to place one red dot on the scheme that they most wished to hear discussed. Tutors assessed the submissions in pairs in private. The next day the eight schemes with the most red dots were discussed with the whole class. The emphasis was on a celebration of the completed project with a conversation involving all the students. Students received marks and written feedback later that day.

Evaluating the pilot model.

Students completed an anonymous evaluation of the process. The main benefits they identified were:

Clarity of feedback:'Constantly know where we stand.' 'Assessment was made clear, feedback sheets were incredibly helpful.'

Stress reduction and productivity: 'Not having to stress about pin-ups and instead using the time to actually do the work.' 'It is more of a conversation.' 'Less draining than a crit.'

Peer learning: 'Seeing other students working process and how their schemes are progressing.' 'Like a conversation.'

Changing the Power Imbalance: 'The simple positioning, seated around a table of work, is something I find makes me less nervous and equal or level with a tutor.' 'The discussion between students and teachers was good and very engaging, because generally, in crits, you don't interrupt.'

Students contrary views: 'I prefer the pin up crit.' 'It takes some getting used to, to allow the drawings to describe the concept alone.'

Staff and external reviewers believe that stages one and two have been successful in producing a higher standard of work and a more inclusive atmosphere in the studio. The students were more engaged with the process and there was a good discussion'; I do like the round table review system and was particularly impressed by [students'] willingness to offer constructive feedback on each other's work.'

The third stage was possibly the least successful in that the time given for practitioners was perhaps too short and the students and staff seemed to move into a more familiar 'crit' mode in the presentations. Some staff found this regressive however others thought it could offer a way forward: 'Could the future be a combination of round table reviews with a final presentation on the wall?' The fourth stage was seen as more successful from a staff and student point of view. 'Interesting discussions' 'Students were engaged in looking at all the work'. 'Student participation was high'.

Conclusion

The pilot model has already delivered useful findings. Each stage of the design process benefits from different methods of customised feedback, which can emphasise specific learning outcomes. Reducing stress surrounding assessments has a positive impact on the rate of design progress. Peer learning and evaluation impacts on the student's overall ability to improve their critical judgement and empowers them in their learning. Judgement and reflection are key to this alternative assessment, the core of architectural education.

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The Power of Process
Nathan Richardson, Oklahoma State University

Imagine this scene. A number of wealthy art patrons attend a very rare auction at a world renown auction house. There may be a few bidders dialed in over the phone, but many are in attendance. Among the items up for auction is a drawing by a person widely regarded as a critically important contemporary artist. Moreover, the work of this artist rarely goes up for auction. I'm sure you can imagine the eager buzz that might fill the room as this exceptionally rare drawing is presented for bids in a highly gilded frame on the wall. Bidding proceeds at a frenetic pace. Bidding finally slows as the price approaches and surpasses $1 million. The closing bid: $1.4 million. The bell rings. The auction is closed. Now imagine what's going through the minds of the winning bidder and those in attendance as the scene turns from exceptional-but-routine art auction to something much less predictable. Imagine the people gazing at the newly acquired work of art. The drawing in gilded frame is not what it seems. It beeps. It rattles. And then, the distinctly identifiable sound of shredding paper. As the drawing slowly descends within the frame, loose fragments of shredded paper begin to appear just below. The frame is smugly shredding the newly acquired work of art for all in attendance to see. It stops before the drawing is completely destroyed. The upper half of the drawing is now sitting too low in the frame, revealing the shredded lower half of the drawing just below the frame. The drawing now loosely resembles shredded mud flaps just below a trucks rear bumper. The story is true, of course. The auction house: Sotheby's. The Artist: Banksy. The work: "Girl with Balloon." If only Banksy could find the time and opportunity to turn so many vestiges of architectural education into new, fresh, performative works of art. This paper explores something quite like that.

Position: Hopefully architects and educators can soon stop putting their blind faith in rolls of trace and a marker to reveal a secret solution to their architectural project. We've all wasted a lot of time and energy sorting through piles of that useless paper.

Position: Hopefully architects and educators can soon stop using laser cutters to cut out an absurd quantity of useless bits and pieces chip board. Laser cutters get tired and need energy too.

Position: Hopefully architects and educators can start thinking of what happens to their giant architectural site models before they set the CNC Router loose on sheets and sheets of MDF.

Position: All that is imagined is not good. All that is drawn is not necessary. All that is made is not useful. All that is built is not valuable.

Through a series of professional and architectural examples, this paper seeks to demonstrate the fallacy of productivity that so often ignites designers and educators. There is a cloud of productivity in design studio education that is simultaneously useful and dangerous. All too often, students and educators set design formation, thinking, review, and presentation on some inalterable trajectory—much like simultaneously setting your Tesla to ludicrous and auto-pilot mode. It leads us (or the machines we control) through nearly endless cycles of repetitive productivity.

This paper argues for a greater degree of retrospection on all that could shape and improve the design process, but so often rests just outside the bounds of design studio education: design formation, design process, and harvesting design. The results have transformative potential for educators, designers, architects, and the lives of people we aim to improve.

In order for much good to come from such a change in our design and education methods, it's essential that we loosen our fixation on familiar things and set ourselves adrift for a time. It's one of the primary reasons we so often miss the challenges our world faces; we are too fixated on our classical themes and compositional sanctimony. That's not an easy call for many educators and architects. Essential as it is. miss the challenges our world faces; we are too fixated on our classical themes and compositional sanctimony. That's not an easy call for many educators and architects. Essential as it is.

On Beyond Artifact: Using Pedagogic Strategies for Assessing Design Performance
Kenneth Brooks, Arizona State University

In many architectural design studios, much focus and attention are directed to meeting the aspirational goals of design brief - to conceptualize and present a design for a building, site, or object. Although there may be learning objectives related to design process, user considerations, building materials or fabrication, tools, representational technique, or other related factors, the focus on the design artifact remains high. Parallel to these traditions, the focus on the endeavors of design practice have been heavily promoted while engaging in the tasks and production of research has often received little attention in the studio, in spite of calls for greater exposure to and application of research and scholarly methods in design problem-solving (Taylor 1947)[1]. By contrast, this paper considers learning strategies that focus on the application and evaluation of the research that can inform and enrich the design process and the effectiveness of performance of a design. The setting is the capstone/thesis studio for graduate students in a Master of Landscape Architecture (MLA) or Master of Urban Design (MUD) program. While the goal of a capstone studio in an undergraduate program might be the demonstration of integrated, complex and comprehensive design knowledge, skills and abilities (KSAs) applied to a particular design project architype. Instead of designing an object, students are designing and measuring the performance of an outcome or benefit of the project.

The paper explores the curricular organization, learning objectives, studio assignments and assessments used in a MLA capstone/thesis studio.   Students in the course were assigned to conceptualize a design endeavor that is focused on the exploration and demonstration of a design research issue or project. The challenge was to identify a research opportunity that would best practices or advance and enrich the discipline's/profession/s body of knowledge and experience. All designers conduct some level of research necessary to bring forward the information necessary to develop the design proposal. In this class, the goal of the research endeavor is to go beyond the research level information-gathering for a specific design assignment and to elevate the aspiration towards developing new insights that can be transferred to design practice in future projects by other designers. A design project is then undertaken that interrogates, explores, tests, evaluates and illustrates the findings or new understandings that come from the research. As such, the design project undertaken as the term studio project is not a "one-off" production, but as the development of a test case, pilot study or prototype. The design facilitates the testing of the research concepts and findings and helps to illustrate their application, utility, validity, and significance. Upon completion of the design phase, the student then conducts a "quadruple bottom-line performance assessment". Inspired by Jerke (2008, p. 230)[2], the assessment evaluates the performance of the design in advancing an agenda of "...economic value, environmental sustainability, social and cultural value, and visual appeal." This assessment attempts to compare the collective relative benefits that accrue in the design of the prototype to the typical benefits that would be expected in similar designs using current standard or traditional design approaches.

Two examples of student projects are presented as case studies of the learning experiences in the course. One of these, the creation of new development guidelines for zoo exhibits was developed by a landscape architecture (MLA) student, while the other and urban in-fill project leading to greater neighborhood vibrancy, was developed by an urban design (MUD) student. For each example, the paper reviews the research question, the strategies for testing and evaluating new design guidelines, the application of those guidelines to a design prototype and the post-design assessment of the performance of the design proposals. An instructor's assessment of the success of the pedagogic strategies and learning experiences is provided and comments for enhancing the integration of research and scholarly methods into graduate design education are presented and discussed. Follow-up strategies for sharing the work within the profession are also reviewed. Note: The course was partially supported by the Landscape Architecture Foundation's work in promoting concepts and strategies of landscape performance (https://www.landscapeperformance.org/resources-for-educators).

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The HUNCH and Architectural Pedagogies IX

Saturday, March 30, 2019
11:00-12:30

Merging Thresholds and New Landscapes of Knowledge
      Giovanni Santamaria, New York Institute of Technology

Considering the impressive and sometimes overwhelming progress that the technology available to investigate, analyze and represent the complexity of our built and natural environments has reached; the role that it has been proactively playing in effecting our way of thinking, designing and building, it has become extremely important to revisit our teaching methodology along with pedagogical contents and objectives. A renewed "Theory of formativity," quoting Pareyson, L., describes a new knowledge that is generated by a constantly transforming process of "making," where theories and learnings rise within the action of designing and building. This has been deeply rooted in the history, and legacy of the most relevant architects and designers, as ontological condition imbedded into the idea of progress. At the same time we have been witnessing several experimentations that were capable of bringing theoretical explorations, such as the ones from the fields of philosophy and literature, into the realm of design and space making, reaching various degrees of quality, but nevertheless opening to further interesting discussions.

(Digital) Design-Build Education
      Andrew Colopy, Rice University

Architectural education is often held up as an exemplar of project-based learning. Perhaps no discipline devotes as much curricular time to the development of a speculative project as is found in the design studio model of most architecture schools in the US. Whether the emphasis is placed on more 'classical' design skills—be they typological, tectonic, or aesthetic—or on more 'socio-political or eco-cultural aims,' studios generally reflect both the skills and values we deem instrumental to practice.[1] The vast majority of such studios focus on the production of drawings, images and models of buildings—representation.[2] Unsurprising, as these are, by definition, the instruments of practice. One might say that the most significant difference between architectural education and practice is simply that the latter results in an actual building. This comfortable and now long-held disciplinary position demarcates representation as our distinct privilege and fundamental role in the built environment.

That position, however, today presents three fundamental challenges for the discipline and education. First, architectural education—to the degree that it attempts to simulate practice—struggles to model the kind of feedback that occurs only during construction and which serves as an evaluative check on representation. Consequently, academic research has tended to emphasize instrumentation (representation) over effect (building), relying on the conventions of construction or outside expertise for building

knowledge. This cycle further distances the process of building from our disciplinary domain and limits our capacity to create innovation in the built world.[3] Second, and in quite parallel fashion, the design studio struggles to provide the kind of social perspective and public reception, i.e., subjective constraints, that are integral to the act of building. Instead, we approximate such constraints with a raft of inside experts—faculty and visiting critics. The third, and quite different challenge, is that the distinction between representation and construction is collapsing as a result of technological change. Students don't draw, they model. Drawings are managed outputs from a higher-order organization of information. Representation, yes, but a mode of representation that increasingly must account for direct translation into material conditions, be they buildings or budgets.

Amid these challenges, design-build programs are receiving renewed attention.[4] As many recent publications point out, these programs have been increasing in numbers such that a majority of US schools now offer some form of design-build education.[5] Speculation as to why includes a millennial generation of social-minded students, and, of course, the competing desires both to more fully engage as well as disengage with technology.

While the extensive benefits of design-build education have been well articulated elsewhere,[6] it is worth noting two that are difficult to achieve in typical, studio-based instruction that also address the first two challenges outlined above. One, any actual building necessitates some form of social engagement. This is the foundational aim for many programs: the opportunity to provide a social good as an integral aspect of education while providing context and relevance to the socio-political or eco-cultural aims of today's curricula. Within the political landscape of a university, this also typically means partnering with non-profits and avoiding any commercial interest—in effect, providing a form of community service—but also establishing a potential research context without said interest. Two, design-build education is distinguished by the kind of experiential learning it affords: teaching students, among other things, how the act of building and the actual material product impacts design and representation.

Despite the growing number of programs, increased student interest, and an ability to address such challenges, many programs face serious hurdles regarding their future viability. They often lack broad support among faculty and are seldom included as required curricula—all while demanding extensive investment in time and money.[7]

There are two critical impediments for design-build education today. First, such programs are seldom fully recognized for the disciplinary knowledge they create. This condition is partly a structural problem given that such research is often viewed as being peripheral to the discipline. But it is also the case that research in the context of such demanding and ill-supported work tends, understandably, to be deprioritized. This reality pits the high costs of design-build—whether measured in dollars, curricular priorities, or faculty commitments—against an inverse set of university priorities that overwhelmingly values research over teaching and service. Second, the longstanding emphasis on small, one-off projects built for local communities using traditional

techniques—while valuable and important endeavors—nonetheless struggles to find relevance in an increasingly global practice of large, technically advanced projects. In response, many design-build programs will need to better advocate their value as research and develop strategies to address these challenges.

In considering the role of research within design-build programs, it is worth reflecting on the difference between process and method. A process produces an effect—an end. While nearly synonymous, a method applies knowledge of a process to achieve a desired effect—a means to an end. The distinction might be said to parallel that between basic and applied research. In many respects, of course, all design research tends toward the applied end of such a spectrum. Nonetheless, design-build work constitutes, perhaps, the most idiographic form of such research, a characterization that clearly and specifically positions its value and argues for its necessary inclusion within a research-oriented curriculum.

Absent from this discussion but relevant to both the third challenge regarding technological change and the second impediment design-build programs face is the extensive research into digital fabrication processes. Such research is so commonplace that one questions why the past fifteen years of investigation has so seldom taken place within an established design-build program? Furthermore, why is such work not widely characterized as part of design-build education?[8] Afterall, the results are often inhabitable structures built by students.

One possible explanation regards the scale and complexity of the research. Having mostly resulted in small pavilions or installations, such work has seldom provided the synthetic experience of a full building with all its various integrated systems and complex external contingencies. A second explanation is that the focus has been on basic, technical research, emphasizing process over method and absent any wider social agenda.

However, we are now well-positioned to advance that conversation, given widespread adoption of such technology. And indeed, furthering any investigation on digital fabrication today requires incorporating it into the fully idiographic context design-build programs already provide. Antoine Picon recently offered a tacit call to such an endeavor by identifying digital fabrication not simply as a technical problem, but a "cultural and political one."[9]

Last year, to address these challenges, we began navigating a transition in our own design-build program. First, we established a new name, one meaning at once to build and an idea[10] to better reflect the synthetic nature of design-build and underscore design research as fundamental to the endeavor. Second, a straightforward strategy: integrate digital fabrication as a limited yet integral part of each project, examining the impact on both building and process. Furthering this approach are four structural changes to curriculum, building systems, scale and context: To facilitate in-depth research, projects now originate within a required studio and are furthered in seminars. The prior strain of research which emphasized repetitive prefabrication has been shifted

to focus on variable envelope systems better aligned with mass-customization processes. The longstanding emphasis on single, single-family houses has also been replaced by sets of buildings that benefit from adaptive prototypes and other strategies to scale impact. And finally, the social ambition contextualizes the current national dialogue on housing affordability through an emphasis on infill accessory dwellings.

While adapting to present needs, the organization also endeavors to lead future conversations. As technological innovation shifts to issues of search and data,[11] digital fabrication will be instrumental in further synthesizing and automating design and construction. To that end, we're focused on developing a specific method, the *Solid Surface*, that instrumentalizes the building envelope toward further integrating design, representation and fabrication. With these changes, we hope to improve upon the role design-build has long played in addressing the gaps in typical studio education while advancing the role and relevance for design-build in both research activities and in defining the discipline. [NOTE: Footnoted references omitted to meet length requirements]

Thinking through Building: The Eindhoven School
        Sergio Miguel Figueiredo, TU Eindhoven

In December 1988, the exhibition "The Eindhoven School: The Modern Past" opened at deSingel in Antwerp. Presenting the work of twenty-three architecture graduates from TU Eindhoven (TU/e), this exhibition signaled the emergence of a new type of architecture in the Netherlands. However, unlike the Chicago or the Amsterdam School, the Eindhoven School was not presented on the basis of formal similarities. Instead, it was described as a constellation of diverse attitudes which ranged from Han Westerlaken's high tech to the refinement of Jo Coenen and the intellectualism of Wiel Arets and Wim] Van den Bergh, but also included the work of John Körmeling, Sjoerd Soeters, René van Zuuk, Martien Jansen, Gert-Jan Willemse, Johan Kappetein, Jos van Eldonk, and Bert Dirrix.

The plurality of the work presented in the Eindhoven School exhibition attempted to capture the unique architectural and educational ethos of TU/e's Faculty of Architecture throughout the 1980s. Most notably, it was claimed that "unlike usually customary in the Dutch architectural tradition, in Eindhoven there was very little concern for functionalist and modernist dogmatic puritanism."[1] As such, "in contrast to the [Delft] modernists, for whom the modern ha[d] become merely a matter of routine, [in Eindhoven,] the modern implie[d] a critical reaction to the past, a past in which architecture [did] not allow itself to be reduced to a meaningless fixity in time."[2] For these TU/e graduates, architecture was more than the pragmatics of function or the aesthetics of form. Architecture was poetry, in which varying layers of meaning were carefully—and individually—developed through quotes and metaphors, references and analogies. Only through such layered meaning(s), could architecture fulfill its potential and purposefully engage the human condition.

Throughout their studies, these young architects had been immersed in an alternative way of teaching. Their design studios did not focus solely on the development of practical expertise, that is, on the development of 'typological, tectonic, compositional or technological' skills, but also on how those skills should be instrumentalized in formulating purposeful social, political and cultural engagement. It was in the combination of the material act of building and the intellectual act of thinking that architecture could be elevated beyond construction and, effectively, fulfill its societal responsibilities. Architecture was perceived as a way of thinking through building. While such approach to architecture may seem trivial today, in the context of a (fairly) recent Dutch technical university in the 1980s, this proposition was just as radical as it was unexpected. However, TU/e's lack of tradition or experience in teaching architecture became perhaps its biggest advantage. Unlike, for example, TU Delft, in Eindhoven there were no existing preconceptions on how architecture should be taught, which not only allowed for a 'radical' new approach to the practice of teaching, but also for greater freedom between the intellectual approaches and the material designs of its students.[3]

Despite the formal diversity of the Eindhoven School's designs, there was a common attitude towards architectural discourse that could be clearly identified among their proposals. This was no coincidence. A greater historical and theoretical awareness had been developed among TU/e's Faculty of Architecture since 1973, when the chair of Architecture History and Theory (in Dutch, Architectuur, Geschiedenis en Theorie, also commonly known as AGT) was first established with the appointment of Geert Bekaert. The prolific Belgian architectural critic forcefully championed architecture as a distinctive human endeavor which, by being grounded in reality, was uniquely capable of societal and cultural engagement in meaningful ways. For Bekaert, architecture was the "only meaningful existential project," since it combined thinking and acting.[4] Despite Bekaert's aloof guidance, his intellectual presence had an immediate effect on the student body, who even considered Bekaert's signature on their diploma to be "a stamp marking their position in the world of architecture," one in which discourse and practice made architecture a critical apparatus for reflecting on—and engaging with—the world around them.[5]

Throughout the 16 years of Bekaert's tenure at TU/e, the combination of academic and practical knowledge, became the favored device through which AGT attempted to achieve its professed intent of an architectural education based on criticality and construction, creativity and craft, individuality and social consciousness. Therefore, as part of TU/e's architectural education—and often in combination with design studios—the chair organized lectures, colloquia and seminars with notable foreign invited speakers (such as Giancarlo de Carlo, Charles Jencks, Dennis Sharp, Bob van Reeth, Ricardo Bofill, Rob and Leon Krier and Peter Eisenman), devised new architectural journals and curated exhibitions. Combined, these activities crafted an intellectual climate for architectural education in Eindhoven which was not only reflected in the rich variety of ideas and opinions presented in their students' work, but also provided a gateway to international architectural discourse—clearly of an eclectic, postmodern flavor—at a time when Dutch architecture was still experiencing a self-imposed exile.[6]

The diversity of designs was inevitably influenced by the diversity of design assignments proposed by AGT. If, for example, the 1980 studio "The Language of Architecture" aimed to investigate the existence of a formal logic of architecture from a building proposal, and thus translate abstract theory into an architectural design, the 1983 studio "World City Eindhoven" solicited the design of high-rise buildings (and corresponding urban structures) to question the relevance of major paradigms in current architecture, and thus, as a way to advance theory through design. Other studios attempted to awake history by positing the applicability of historical ideas to the present context, from the 1982 "Catholic Buildings" to the 1986 "Durand, Lecons d'Architecture." Ultimately, while all AGT design assignments explored—and attempted "to operationalize"—the relation between practice, theory and history, their diversity aimed to also reflect the heterogeneity of contemporary society.[7]

Wider recognition of Eindhoven's unique contribution to (Dutch) architecture culture was expressed both nationally and internationally. If in the Netherlands, this was signaled by invitations to several of the Eindhoven School's "members" to participate in the first edition of the Biennale of Young Dutch Architects in 1983 and three Rotterdam-Maaskant Prize recipients in four years, internationally it was most clearly articulated through Jo Coenen's invitation to participate in the first Venice Biennale.

Despite all the praises directed at the Eindhoven School (or its members) thirty years ago, the memory of this particular moment in Dutch architecture culture has been all but lost. While it could be easy to dismiss that what the Eindhoven School signified and identified was a mere aberrant moment for an otherwise unstoppable march of Dutch modernism towards its renowned SuperDutch expression, a closer look reveals how "The Eindhoven School" exhibition (and the architectural education that it represented) may have been the most significant, yet overlooked, moment in Dutch architecture history. While the historiography of Dutch architecture has (correctly) identified Rem Koolhaas' Delft symposium "How Modern is Dutch Architecture?" (1990) and the Dutch entry to the 5th Venice Biennale "Modernism Without Dogma" (1991) as significant moments in questioning modern architecture's position within Dutch practice and, inevitably, for the emergence of a SuperDutch generation of architects, it has (yet) failed to recognize how these events were directly responding to the questions posed by the "Eindhoven School" exhibition (1988), particularly the need to break down dogmas of both modernity and history in Dutch architecture.

While both the Eindhoven School's label and exhibition were originally constructed to articulate the results of a particular time when some Eindhoven faculty dealt with students in a very free manner, their work nevertheless revealed the crucial role of the practice of teaching architectural design. Specifically, how new approaches to teaching can lead to new impulses and new ideas in architecture with wide-reaching effects (even if those have been somewhat forgotten today). Most importantly, however, the Eindhoven School shows us how important it is for architectural education to stimulate thinking and acting, to create a thinker space for all forms of inquiries, where architecture can respond, once again, to its cultural, societal, and political

responsibilities. That is, how education should stimulate architecture to be thinking through building.

[1] Joris Molenaar, "Architectuur, Vrijheid en Individualiteit: De Eindhovense School in Antwerpen [exhibition review]," *Archis*, 1989, 5.
[2] Gerard van Zeijl, "Opening van de Tentoonstelling: 'De Eindhovense School, Het Moderne Verleden,'" December 14, 1988, 2, Geert Bekaert Archive, Univ of Ghent.
[3] Pier Vittorio Aureli and Saskia Kloosterboer, "No History as History, No Theory as Theory: A Conversation with Geert Bekaert," *Hunch: The Berlage Institute Report*, no. 4 (2001): 40.
[4] Christophe Van Gerrewey, "A Chance of Survival. Introduction," in *Rooted in the Real: Writings on Architecture*, Vlees & Beton 87 (Gent: WZW editions and productions, 2011), 13.
[5] Jos van Eldonk, "40 Squares / Casa Novissima," 1989.
[6] The Dutch self-imposed architectural exile was perhaps best captured by Hans van Dijk's comment on how the Netherlands had become "the Cuba of modern architecture." See Hans van Dijk, "Het Onderwijzersmodernisme," in *Hoe Modern Is de Nederlandse Architectuur?*, ed. Rem Koolhaas (010 Publishers, 1990).
[7] Gerard van Zeijl, "Projecten Bij de Vleet," in *VIII Jaar AGT: Projectwek 1980-88* (Eindhoven, 1988), 13.

Constructible Ground. An Exploration in Community
Laura Pérez Lupi, Swiss Federal Institute of Technology

I shall become a master in this art only after a great deal of practice, until eventually the results of my theoretical knowledge and the results of my practice are blended into one—my intuition, the essence of the mastery of any art[1]
Erich Fromm

This paper aims to pinpoint "the very moment in which ideas are translated from one medium into another, and in particular, from the realm of the mind into physical output[2] in the context of research and teaching conducted at XXX Lab (XXXX) -in particular with the first year Bachelor design class- during the last 4 years[3]. After completing a workshop with first year students in summer 2015, at the Théâtre de Vidy-Lausanne -leading to a wooden pavilion (Figure 1), in strong resonance with Max Bill's project for the Swiss National Exhibition 1964-, the XXX team considered an ambitious hypothesis: Would it be possible to construct one project with over two hundred students as authors and builders? Following Richard Sennett's remark on "coordination working much better if the two hands (of a musician) work together from the start"[4], the 2015-2016 program Inside Parisscheduled HOUSE 1 to begin in April 2016 and to be completed on campus two months later, by May 31st. To facilitate the process, a 11m x 11m x 11m balloon-frame timber construct (Figure 2), holding the genetic code for the future projects, was built. Coined with the term protostructure -"a structure that is ready to receive either alteration in itself, or to accommodate further configurations (...) whose destiny is to evolve (...) engaged in a constant interaction with agents"[5]-,this operational concept conceived by the XXX lab and investigated as a PhD research project by Agathe Mignon under Prof. Dieter Dietz's supervision will prove to be essential in the collective designs that will be the HOUSE series. HOUSE 1 (Lausanne 2015-2016), HOUSE 2 (Zurich 2016-2017) and HOUSE 3 (Brussels 2017-2018) have each initiated a unique collaboration of around two hundred freshmen architects. In each, the concept of protostructure, in the form of an interpreted balloon-frame, was a

common denominator in constructive and structural respect. Furthermore, the idea of protostructure "translates the notion that constructible ground is always a common (...). Therefore, all actors are bound to negotiate between themselves"[6]. The HOUSES house each a series of sub-projects -ROOMS- that have been conceived by groups of 15 to 20 students, guided by a team of studio directors. The XXX y1-program[7] meticulously outlines the timeline and a list of required elements, to provide a common ground for dialogical[8] discussion, to negotiate the configuration of a dozen studio-projects and how they will be spatially and structurally realized inside the common protostructural frame. Behavioral neuroscience[9] has shown that in supportive environments, the ratio of the individual's perseverance multiplies. The Oxford English Dictionary (OED) defines hunch as the intuitive feeling that something will (can) happen. We hypothesize that one parameter contributes widely in providing ground for mutual collaboration and proliferation of the hunch as an operational intuition: confidence. Back to the OED: "the mental attitude of trusting in or relying on a person (team) or thing (structure)". In the context of the lab, the XXX program as well as protostructures have proved to be a breeding ground both for students and educators to rely on, to give -and therefore to receive- their most, to flourish. The XXX y1 program and the horizontal structure of the team as well as the organization of the studios along the year facilitate the teaching of practice and the practice of teaching, leading to magic moments when complicity and confidence unfold and music happens. Richard Sennett points out the basic distinction between practicing -solitary experience- and rehearsing -collective experience (Figure 3)- and how "rehearsing drags musical habits into shared consciousness."[10]. Developing a live project as a school subject -first option stated at the RIBA conference (1958)- with regards for architecture students to "be brought into the closest possible touch with all the requirements of practical building"[11] may also ensure emotional investment and raising values such as "ethical grounding" and "public purposes", as stated by Ernest Boyer in his Epilogue for Building Community[12]. We have noticed that former students are often willing to tutor their new colleagues, participating on the knowledge transmission mainly with regards to drawing, model making and tools mastering. Furthermore, as E. Boyer remarks, educational background "is also a chance for partnerships with other professional schools and academic departments"[13]. This infection, "necessary for complexity"[14], can thus inform architecture student's DNA. In the introduction of his book *Together* (2013), Richard Sennett remarks that "by the time children (students) can negotiate the rules for a game (project), they are able to negotiate ambiguities and resolve them".[15] Should we be able to follow this parallelism -between playing and building together- to the appropriate extent, "the time has come, then, to demystify architecture, to elevate its place in the consciousness of the public and in the daily lives of communities."[16] This recalls the refinement we inevitably breathe while envisioning musicians rehearsing together. Being a fact for musicians concertizing in philharmonic orchestras, why shouldn't it be possible for architects to perform together? With the ROOMS phase accomplished and by entering the collective HOUSE phase, each person will contribute to the overall project of this small community of two hundred people, in overlapping but yet specific roles, in such a way that "here, the architect is not just a creator, he is also a craftsman, a producer, an engineer, a manager etc.."[17]- (Figure 4). This active role entails an apprehending of what building a community means -each being a relevant agent in the

pursuit of a common goal- and furthermore, preserves everyone's specific authorship[18]. Spatial exploration[19] in one-to-one scale becomes a suitable context for "Sennett's views on cooperation, dialogical discourse, and the necessity for a negotiation of space of cultural diversity"[20]

[1] Erich Fromm, *The Art of Loving: [An Enquiry into the Nature of Love]* (New York: Harper, 1956).p.5
[2] Dieter Dietz and Daniel Zamarbide, "Drawing for Real. A Quest into the Space of Imagination," in *All About Space Volume 3 Beyond The Object*(Zurich: Park Books, 2018).p.268.
[3] The XXX Lab has been running Bachelor Year 1 design studios since 2010.
[4] Richard Sennett, *The Craftsman*(London: Penguin, 2009).p.165
[5] Agathe Mignon, "Proto-Structure," in *All About Space 2*. HOUSE 1 CATALOGUE(Zurich: Park Books, 2017).p.112
[6] Dieter Dietz, "XXX Y1 An Approach to Teaching Architecture in a First Year Design Studio," in *All About Space 2*. HOUSE 1 CATALOGUE(Zurich: Park Books, 2017).
[7] The first Year 1 program dates from 2010. Every year, it incorporates new variations as a result of empirical inputs due to the teaching experiences. Authorship is erased here. Every year new contributions transform this protostructure.
[8] Mijail Bajtín (1895-1975), author of *The Dialogic Imagination*, was the first to coin the word dialogicto "name a discussion which does not resolve itself by finding common ground. Though no shared agreements may be reached, through the process of exchange people may become more aware of their own views and expand their understanding of another" Sennett, *Together*.p. 19
[9] Joseph AU - Nunez, "Morris Water Maze Experiment," *JoVE*, no. 19 (September 24, 2008): e897, https://doi.org/10.3791/897.
[10] Sennett, *Together*.p.15
[11] Leslie Martin, "The 1958 RIBA Conference on Architectural Education," 1958.
[12] Ernest L Boyer, "Building Community," in *Building Community: A New Future for Architecture Education and Practice*. A Special Report.(Princeton, NJ: Carnegie Foundation, 1996).P.145
[13] Boyer.p.146
[14] Donna Haraway, *Anthropocene, Capitalocene, Chthulucene: Staying with the Trouble*, 2014, https://vimeo.com/97663518.
[15] Sennett, *Together*.p.13.
[16] Ernest L Boyer and Lee D Mitgang, *Building Community: A New Future for Architecture Education and Practice. A Special Report*.(Princeton, NJ: Carnegie Foundation, 1996).
[17] Dieter Dietz, "Exploring Uncommon Territories: A Synthetic Approach to Teaching Architecture," in *Explorations in Architecture / Teaching Design Research*(Basel - Boston - Berlin: Birkhäuser, 2008).
[18] "Collective architectural work becomes possible only when every individual (...) is capable of understanding the idea of the whole, and thus has the means to coordinate his independent, even if limited, activity with the collective work" Walter Gropius, "The Theory and Organization of the Bauhaus," in *Bauhaus*, 1919-1928(New York: The Museum of Modern Art, 1938).
[19] "XXX's main focus is space, as suggested by the name to which its acronym refers. The one-to-one scale directly employs the human body as an interactive component of spatial exploration."   Dietz, "Exploring Uncommon Territories: A Synthetic Approach to Teaching Architecture."
[20] Dieter Dietz et al., eds., *All About Space 2*. HOUSE 1 CATALOGUE(Zurich: Park Books, 2017).P.10

Applying Academics' HUNCHES into Reality VI

Saturday, March 30, 2019
11:00-12:30

Understanding the Value of Travel: Study Abroad Program in Barcelona.
Camilo Cerro, American University of Sharjah

As most design pedagogies focus on typological, tectonic, compositional, and technological studies there is an experiential teaching component that has the potential to bring them all together and that also has the strongest repercussion on the development of an ethical, independent mind; That is travel. The capacity to function with other cultures, learn independence and adaptability, experience a building by walking into it instead of looking at photos, and designing for a different set of rules than the ones the students is accustomed to, are all some of the outcomes of participating in a study abroad program. Understanding the value of travel, our college started a study abroad program two years ago. Currently preparing for our third semester in Barcelona, we have been assessing what has worked and what has not so we can adapt and evolve to keep the program fresh and relevant. This paper will cover our pedagogy and process, the type of classes we taught and the reasons behind them but more than anything, the way it has changed the participating students when compared to those that have not participated on a program of this type. The semester was divided into four courses: ARC394-Places and Culture, was designed to function as a walking tour of the city of Barcelona, where the students learned on the go by visiting sites following a chronological history of the city that took place throughout the semester. ARC494-Contemporary Architecture Practice, took place in both the classroom and by visiting contemporary architecture sites. The course was taught by EMBT (Enric Miralles and Benedetta Tagliabue) as an opportunity for the students to learn the design thinking and process behind the main project of a working architectural firm as they take an idea from sketch to construction. ARC581-Contemporary Spanish Architecture, offered the student the opportunity to visit: Seville, Cordoba, Granada, Bilbao, Madrid, Figueres and Olot in walking tours covering the history of these locations from an architectural and design perspective from antiquity to modernity. And finally, ARC501-401, a vertical design studio where the student was able to bring all the classes together to design a project in the city of Barcelona, putting to the test, their experiences influenced their design. All these courses where designed to work together creating an interdependent system that allowed the participants to learn through experiencing architecture and design, while being able to implement that newly learned design knowledge into site and cultural specific design projects.

Keywords: Study Abroad, Barcelona, pedagogy, independence, adaptability.

Universal Method, Local Design

Cristina Murphy, Morgan State University
Carla Brisotto, University of Florida

In May 2017 the American Institute of Architects Conference honored Paul R. Williams, the first Afro-American architect awarded posthumously, with an AIA Gold Medal. At the ceremony, his granddaughter in front of an audience of architects, which majority was male and white, called for a more inclusive education to nurture, support, and advocate for an architectural education that is more just throughout ethnicity and genders. Though African Americans made up 13 percent of the total U.S. population at the last census, only 2 percent of licensed architects in the U.S. are African-American, according to the National Association of Minority Architects (NOMA). In 2007, African-American women made up a scant two-tenths of a percent of licensed architects in the U.S., for a total of just 196 practitioners. (The University of Cincinnati's database of African-American architects report an increase in that number, to 385, of a total 107,581 licensed practitioners in the U.S.).   In Paulo Freire's *The Pedagogy of the Oppressed*, education is a form of empowerment that liberates minorities from a standardized system of knowledge. Thus, the educator has to tailor the teaching experience through a deep understanding of his/her students. With this approach the educator can learn about the context the students live in, helping them visualize individual problems that later can become social problems, advocating for their awareness and willingness to take a professional, creative and social stand.   Following Freire's pedagogical principles and to empower the minority groups among the body of students, school of architectures need to focus on a different approach to education, one that allows students to lead their enfranchisement. Education should reconnect these individuals to the environment they live in (Local Design) while, at the same time, giving them the opportunity to go beyond the expected path of architectural education (Universal Method).   Seen in this light, the student's formation cannot be separated from social consciousness. The studio environment must become an opportunity where students learn the craft of architecture as well as develop awareness of their role within the profession and the whole community that surrounds them.

Teaching at the Graduate Program in Architecture at one of the largest public American historically black colleges and universities call to follow Freire legacy and to responsibilize faculty, students and curriculum. In this university, most of the students are of low-income, African-Americans, and work full time to maintain themselves in school. The majority never traveled outside their city and, most worrisome; they do not have a clear, understanding of the impact of the city on their ethnicity emancipation. It is necessary to expose these students to a different studio philosophy that provides cross-cultural realities intertwining the understanding of their city with national as well as international learning experiences.

Promoting to actively change today's curriculum in the studio and facilitate a thinker-space that provides uncompromising inquiries to all available knowledge and stimulates minority students to disenfranchise themselves can occur by employing a Universal Method and Local Design, simultaneously. This can be placed into practice by:

1- providing students the opportunity of traveling abroad and expose them to different cultures by deploying an international academic exchange with other institutions (Universal Method). African-American students travel less and, as a consequence, many are missing out on life-changing opportunities. The majority of students studying at public American historically black colleges lack capital (or knowledge of scholarship opportunities). Many believe that students have to pay out-of-pocket or apply for distinguished scholarships that are fully funded but very competitive. Black families are overly protective and full of questions about the destination and potential dangers that come with foreign nations based on possible acts of racism;

2- training them to work nationally (Local Design) and internationally (Universal Method) with weak communities by engaging instruments for empowerment. We are globalizing quickly both within the city and in the countryside and being culturally sensitive is key to better citizenship. Being aware of cultural values is fascinating and help to understand international issues and conflicts, shift perspectives to see and learn about other's situations;

3- preparing them on how to positively transform local places via the conscious collaboration of diverse disciplines and global knowledge. As Tijs van den Boomen (Dutch journalist specialized in public space) states, the current generation of architects, urban planners, and landscape architects know that making urban regions more healthy and vital for the communities takes a more collaborative and intelligent approach: any design that misses accommodating that synergy is due to fail.   By working in symbiosis among the above curriculum and Freire's pedagogical principles, we propose a studio culture launching a space of learning that explores strategies that can give citizens more relevance and influence in the development of their living environment.   This studio-space speculates on ideas that create environments for citizens' self-development and design buildings that contribute to a JUST CITY through a parallel exploration of three realities, in three different geographical locations. The first case study is one of the most problematic cities in its country, where injustice is the standard for specific groups; the second case is the poorest city in its region yet, today, blossoming into one of the most influential Global Cities; the third is an industrial area, a magnet to migrant populations.

To successfully run the JUST CITY Studio, the teachers deploy these iterations:
a. In March 2019, the students will travel internationally to case study one for ten days: for this Studio, students typically prepare extensive architectural material to illustrate their design process. Besides these tangible outcomes, students will work hand-in-hand with local architecture students and gain a different skill-set namely "cultural sensitivity;"

b. Case study two will be elaborated via a symposium in April 2019. This one-day activity will revolve around the concept of "Redlining," a "zoning" technique started with the National Housing Act of 1934 and that created systemic disparities and inequalities that not only perpetuate our most pressing social challenges but impede the full potential of democracy to-date. Through this symposium, we propose a past to present

journey of the transformation of place, race, and class in urban America. Local and Universal audience will contribute to the success of this activity;

c. The final case study explores a second international trip where students will work side-by-side with the native community and the migrants alike with the support of a local non-for profit agency.

In conclusion, our teaching strategy provokes thoughts, questions, and dialogues around the policies, practices, and investments that accentuate systemic disparities and inequalities and impede the full potential of democracy.

Pepper Politics: A Case Study of Faculty-Led International Research Studio for Undergraduate Architecture Students Involving Two Minority-Serving Schools of Architecture
       Suzanne Frasier, Morgan State University
       Lakshmi Manohar, MES College of Architecture

In order to provide study abroad opportunities for two minority-serving schools of architecture at institutions of higher education with a formalized, cooperative relationship, a study abroad program, the Research Studio, has been established. In addition, in order to provide intensive, immersive mentorship opportunities, local practicing architects are invited to join the trip and participate in the Studio as mentors and academic advisors. During the Research Studio students form joint groups in order to facilitate peer-level collaboration, which aids the total immersion in place and process that the Research Studio seeks to achieve. The students learn from interactions and seminars with influential agencies and persons who have defined urban design, including governmental agencies and contemporary architects. This exposure to policy, intellectual thought and ground-level development serves as an ideological foundation for students' analytical understanding of the social and physical structures of the focus site. This report presents the genesis, curriculum, itineraries, the resultant award-winning student research projects, and additional outcomes as case studies for reflection and review.

Transcending Disciplinary Boundaries
For the past two decades the built environment curriculum has seen remarkably rapid growth, has become increasingly interdisciplinary and critical, and increasingly demanding on students by the addition of computer aided design, sustainable building technologies, and a broader cultural consideration of design and construction precedents. However, the delivery of design education, our production of design researchers, and our expanded definitions of who is a designer have not kept pace. There is a growing call to transform architecture education with the intent of producing not just trained future architects, but students who are socially responsive and interested actors ready to face and energetically contribute to alleviating the full spectrum of challenges facing global societies. It is with this current scenario in mind that key questions come to fore: How can we be agents of positive change in helping to

build capacity for educational transformation? How can we focus on the use of advanced pedagogy to produce engaged and empowered architecture students capable of taking action to address socially crucial and environmentally critical local and global challenges? Traditional studio assignments that involve design intervention were not considered for the Research Studio curriculum. Furthermore, studio research projects focusing on "ruin porn" were assiduously avoided. Rather, the studio "assignments are in-line with a contemporary socio-political agenda." To facilitate this agenda, a visual sociology research project was developed. The assignment emphasizes "questions of social relevance" via utilization of visual means of data collection and analysis utilizing postcolonial studies of agency and gaze.

Bridging Practice and Academia
A key initiative of the Research Studio is to foster lasting relationships between participating students and practicing architects from the local professional community. To this end, a local architecture foundation joined the Research Studio as a professional affiliate. This partnership provided practitioners with an immersive mentorship opportunity and provided students exposure to practitioners. Studio assignment crafted to be fully completed in situ rather than a classroom or office, to provide professionals with an opportunity to apply their expert knowledge without pressure to satisfy clients' demands and without distraction of business obligations so that the they are intellectually challenged and thereby their engagement and investment in the course is intensified. Specifically, focusing on general transferable skills of design practice is not the point of the Research Studio. Thereby, participating professionals are challenged with a special opportunity to observe and consider urban dynamics theoretically. The Research Studio has the capacity for educational transformation via a search for the physical manifestation of historic "pressing issues that challenge the local built environment".

Questioning Relevance to Society
The authors, rather than viewing professional practice as a privileged site for the production of knowledge, assert that "[there] are diminishing returns from the continuing study of [entrenched] topics. And repeatedly observing these phenomena does not help us fix them". Even though the architecture profession has reeled away from dictatorially defining style tropes of previous decades and is now focused on technological add-ons to entrenched edificial forms, "[focusing] on the innovation of interdisciplinary topics will bring about new ways to accelerate the adoption of desirable practices as diverse as "...environmental behavior and neurosciences; gender equality, day-lighting and maternal health; hygroscopic design; micro economics; etc." The interdisciplinary aspect of architecture lends the field to a myriad of practical discoveries about fundamental problems. The profession of architecture has an admirable track record of interdisciplinary innovations and accomplishments: universal design, color psychology, to name but two. It is difficult to come up with something new... the study of architecture is a discipline of critique and we know that the general culture of architects being critical is that of intellectual snobbery. It is the double bind, which is not a revelation -- especially to this audience. And while these new strategies are forged, it is essential to ask whether we are circumnavigating an obstacle or are we taking a path of least

resistance? The visual experience of modern spaces all over the world is beginning to look alike. Irrespective of where they are, the present day buildings have a stereotyped style, which, in a way is disrespecting its very own setting. It is not surprising that this practice has its roots in the system of education from where it is being imparted. Until the last century, we have had diverse cultures with distinct ways of life and their related aesthetic sensibilities. The homogenization of human cultures is one of the biggest challenges that modernity is facing which needs to be addressed by both academia and practice. The real issue is to understand how aesthetic sensibilities are inextricably linked to their social and cultural context. It is this instinctive need of the system to allow its aesthetics to respond to cultural needs and nurture cultural diversity of local contexts that are being suppressed. The distribution of inquisitive design practice generators via an undergraduate study abroad program facilitates an edification of the capacity of the academe.

A Contemporary Theoretical Agenda
This project presents "a global comparative approach in relation to culturally different media forms, historical frameworks, and theoretical paradigms" and incorporates international development and postcolonial studies in order to counter participants' visual conservatism. This academic project uncovers historic precedents and extant examples, and persons, ideologies, and traditions that have defined architecture and urban development. This investigation of the study abroad Research Studio bolsters pedagogical understanding of the curriculum as it is impacted by the social and physical structure of urban culture specific to the site. The research reveals multiple systems of tension by considering the consequences of aggressive commercial real estate development and historical societal conventional via a matrix of economics (Lomborg; Sen), and urban sociology and culture (Sassen), and urban enjoyment (Whyte; Sennett). In this paper we would conclude with a concise reflection upon the consequences for urbanism-related research and theoretical discourse and the relativity of the design academy in view of international urban culture and historical civic engagement.

The Indigenous Ecologies Studio and the Agency of Architecture
        Phoebe Crisman, University of Virginia

Developing studio pedagogy need not be an either/or choice between engaging societally relevant issues and learning specific architectural knowledge and skills. Certainly the best architectural practice does both/and. This paper examines a recent transdisciplinary architecture studio that collaborated with Sisseton Wahpeton Oyate (SWO) tribal citizens to design and eventually build a Cultural Center on their Lake Traverse Reservation in South Dakota, USA.[1] Indigenous peoples and their architecture are marginalized in both history and contemporary design discourse in North America. Thus, most architects are unable to imagine inclusionary and culturally relevant environments for indigenous communities on tribal land. In order to address this discriminatory situation, the studio was designed to explore how indigenous cultural

and ecological paradigms[2] can be creatively embodied in the built environment through space, form, material, and use.

The studio explored architectural concepts of continuity and sustainability, which are profoundly connected to the world view and traditional architecture of Native American tribes. Modern architects such as Rudolph Schindler and Frank Lloyd Wright, along with many contemporary architects, seek to integrate their architecture with the land, climate, culture, and material of a place. For instance, Frank Lloyd Wright's Taliesin West connects with the Sonoran Desert through site-sourced stone and low, planar forms that provide shade and channel air. Wright described how "Our new desert camp belongs to the Arizona desert as though it had stood there during creation." Pueblo architecture and the Earth lodges of the Great Plains attained this situatedness. Yet, traditional Native American spirituality goes beyond site specificity to understands everything as related—stones, plants, creatures—all part of a living universe. Sioux scholar Vine Deloria notes the difficulty of American Indians living in harmony with nature today, because indigenous culture has been deliberately destroyed by US government policies and radically transformed over time.[3] For instance, over 60% of the SWO tribe live in poverty and 40% are unemployed. They are still affected by the mass internment, forced relocation, and human rights atrocities they have experienced since the Dakota War of 1862. Poor education, lack of skills and jobs, substance abuse, and youth suicide are barriers to individual and community thriving. Yet, Deloria finds American Indian spiritual traditions are still more in tune with the needs of the modern world than Christianity with its historic support of imperialism and disregard for ecology.[4] Our partners are two bands of the Dakotah tribe, whose name derives from WoDakotah, meaning "harmony—a condition of being at peace with oneself and in harmony with one another and with nature."

So what does the culture of indigenous peoples mean for their architecture today? This question was explored through the collaborative studio design of a place for the Sisseton Wahpeton Oyate to reclaim their culture, spirituality, and tribal sovereignty. The project is located at the Sisseton Wahpeton Tribal College, where massive, nondescript rectangular buildings float on a field of lawn and asphalt within the larger Jeffersonian grid. During a four-day design workshop on their Reservation, however, the Dakotah expressed their opposition to these carpentered, rectangular forms and spaces[5] Asserting autonomy from the cartesian condition, the studio designed a Cultural Center woven into a restored tallgrass prairie at the campus edge. A village of small, off-the-grid studio buildings will encircle a central Tiotipi inspired by traditional earth lodges. The Tiotipi will support storytelling, theater, music, and dance performances. Students of all ages will learn about traditional crafts and new film and digital media practices in the studios. Archive and gallery spaces will safely store and display historical tribal artifacts. Intertwined gardens and work courts will provide places to learn about native medicinal plants, seed saving, and Native foods. Akin to John Dewey's idea of continuity, the Center "does not live in an environment," but "it lives by means of an environment." Powered by wind and sun, the buildings will collect rainwater and be warmed by the earth's geothermal heat. Made of locally sourced wood, rammed earth, and hemp insulation, the buildings are designed to be built in phases by tribal

builders and vocational students. The studio developed detailed drawings for the construction process, which will support the project's capacity-building and community-building intentions.

The studio was informed by theories of agency,[6] community engagement,[7] and feminist writings on co-authorship and storytelling as tools of empowerment.[8] The pedagogy departs from the normative architecture studio approach that investigates a hypothetical problem or program without connection to people outside the studio. Instead, the realities of people and place were central. This approach requires the type of 'reflection in action' first described by Donald Schön[9] and further theorized by Alain Findeli as 'project-grounded research.'[10] Students were asked to write about how socio-cultural relations at the University and on the Reservation shaped our interactions and the architecture produced. For instance, Architecture graduate student X wrote:

> "We are often told as architects that we will need to be forceful in order to defend our ideas against engineers, contractors, developers, and clients whose input will be more likely to derail a project than improve it. It is considered dangerous to trust clients too much and trying to please them is almost like "selling out"; architects are essentially artists after all, who have gone through highly rigorous training to be able to stamp their creative and legal signature on built projects. On the flip side, we are often attracted to the field of architecture because of its unique ability to have a positive impact on people... A lot of my academic work has been spent trying to find my own WHY in each project, beyond having something in my final presentation that looks pretty or is interesting to talk about. How do you design for people in a way that is positive? Co‑design seems like an amazing start... Having to communicate ideas to a group of people who don't know much about architecture, BUT truly envision that a new set of buildings has the ability to revitalize their culture, bring people together, and educate and excite young people is challenging, inspiring, and new."[11]

The Dakotah community reflected on their culture and place in new ways, while the studio explored alternatives to the normative design process. Beyond designing a place for intergenerational cultural life, the architecture project sought to contribute to the political sovereignty, economic development, and cultural flourishing of the Sisseton Wahpeton Oyate. More generally, the studio pedagogy explored how architectural education and practice might help to undo colonial legacies, support collective cultural recovery, and advance economic and political sovereignty for indigenous communities. The participatory design process itself established a rich exchange between two diverse communities—tribe and university—that each shared their knowledge and ways of being in the world.