Precedent-Based Learning:
An Approach for Studio Pedagogy in the Early Years

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PREFACE

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 under-stand 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 princi-ples to specific situations to solve problems of various kinds. We call this the didactic method. In the didactic approach there is a system-atic 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.

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 mat-ter, architectural curricula within which such instruction is found, are invariably of an indirect kind. They describe the stylistic or for-mal attributes of the architecture that is promoted by the particular pedagogy in order to explain its characteristics, principles and tech-niques[5,7,8,11,19].

ARCHITECTURAL PEDAGOGY

In one of the most frequently cited schools of education, namely the École des Beaux Arts, the style of acceptable designs, is based on known and carefully documented examples of early Greek and Roman Architecture. Its pedagogic program is described, often, as a function of principles of design derived from these examples. [7] In order to facilitate the production of designs of a similar kind or style, specific principles of composition, media of representation, accompa-nied with "pattern books" of designs are provided for both instruc-tors and students.

Strictly enforced procedures of design are used to supplement the learning experience of students during the course of their formal training. The pedagogic model is a function of the corpus of designs that the educational system promotes. This connection appears to be inescapable even for other schools of educational thought -- i.e., Renaissance, Bauhaus, Post-Modernism [7] -- or in the case of similar historical accounts by other authors. [17]

The normative model of learning by explicit principles applied to carefully selected instances does not work so well in the context of architectural design instruction. In the case of the École des Beaux-Arts, students apprentice under faculty and upperclassmen follow-ing closely the examples set by them and the pattern books. The

principles of composition that they have been instructed to use are not more immutable than the antique styles from which they have been derived. Their dispensability has surely been demonstrated during the International Style a movement, which simply mustered up the resolve to reject patterns of the past and replace them with brand new ones. Thus the students of the Modernists were placed in a mode of inventive rather than imitative design. They relied on none of the historical precedents of the École, regardless of the type of problem that they tackled or the client with whom they worked.

When the International Style gave rise to Post- Modernism there was a return to the incorporation of historical patterns into archi-tectural styles and then into pedagogy. Subsequently during Deconstructivism, instruction of the students changed once again. This time students were encouraged to work from analytical abstrac-tions of form and composition in violation of both the classicist and modernist principles; demonstrating once again that the principles of design are at best volatile.

It is evident then that design instruction represents patterns of learning and teaching that are different from other forms of instruc-tion. Let us now consider some of these differences more specifically.

LEARNING THROUGH PRECEDENTS

Knowledge disseminated in the design studio is often packaged in the form of precedents or generalizations drawn from, at best; a limited number of instances -- rather than from first principles. This is evident in virtually all texts, theses, treatises and papers on archi-tectural education, a fair number of which have been sampled here [6,7,8,9,11,18,19,20].

Precedents in this sense are specific designs or buildings, which are exemplary in some sense so that what architects and students glean from these examples, can support their own designs. These precedents are very often past solutions to specific design problems. Normally, they are used to highlight a handful of design issues: such as, elevation design, systems integration ideas, structural concepts, plan circulation diagrams, section-volume concepts, and so on. In some instances precedents are negative ones, illustrating some sort of a failure and instructing students on what not to do [2].

Learning, in these instances, takes place through examination, anal-ysis and abstraction of the information contained in the Precedent representation by the students, occasionally with the help of the instructor. The format of this analysis is generally well defined at the onset. Students are asked to research a building, collect relevant infor-mation, usually along some specific dimensions (like the ones cited above) and present it formally to peers in the studio or the office. In subsequent phases, the role of the Precedent in generating designs is rather irregular. Dictated by circumstances of board-crits or other reviews of the work, which is referred to as a "situational" mode by oth-ers,[6] some design rules are abstracted from the Precedents. These are extremely useful in evaluating design ideas or generating new ones. Yet the fact remains that the most productive use of Precedent analysis in design is conducted in an informal and ad hoc fashion.

CONCEPTUAL VERSUS PHYSICAL KNOWLEDGE

Nevertheless the abstractions derived from the Precedents are invalu-able in bridging between the "conceptual" and the "physical" vari-ables that are the basis of spatial design.[9] Conceptual variables are the schemata that provide the underlying order and structure for an aspect of design. To provide the various functional and aesthetic val-ues which are the hallmarks of all "good" designs, the physical ele-ments of the building design must be integrated with one another based on globally constraining variables (loosely called "concepts" or "design concepts"), dealing broadly with such criteria as structural integrity, clarity of circulation, appropriateness of proportions, and so on. Most successful designs at least ones that are recognized in the field as notable have explicable ideas underlying these dimen-sions: for instance, the core and open plan layout of the Farnsworth house by Mies van der Rohe, the served and servant spaces of the Salk Institute by Louis Kahn, the exploded box of Fallingwater by Frank Lloyd Wright. How these abstract concepts in fact give rise to and later are used to justify and explain explicit physical descriptions of designs is a particular skill that the architectural student must learn in school.

This requires that the knowledge of physical elements as well as that of conceptual constructs is readily available to the student. The student must be skilled at using these as the foundation of the design ideas generated and ultimately the drawings that are produced. At Fallingwater, the location of the windows at the corners and the hor-izontal banding of the elevations by means of inverted beams of the structural system, for example illustrate how the physical elements reinforce the architectural concept and vice versa.

A HANDS ON LEARNING EXPERIENCE

A significant feature of the mechanics of instruction in the design studio is the constant interplay of skill and knowledge or theory and practice. While there may be little in the way of first principles of design, there is a great deal in the way of discovering how principles affect the solution to a specific problem and how specific solutions may illustrate larger principles. Furthermore, this is done in a gener-ate-and-test mode. Students learn by applying principles to designs and inferring principles from designs. Faculty play the role of coach or critic in the course of this. Cognitive skills supporting this operation develop after many trials and almost just as many errors.

Knowledge and skill are interconnected through experience in stu-dio work. Students are expected to actively use, for example, solar factors, thermal conductance relationship, and structural ideas in creating new building enclosure details. In this process, one factor informs the other. Students learn not only about the concepts that work but how to put these concepts to work, situationally.

SIMULATION OF DESIGN IN THE OUTSIDE WORLD

The early precedents of the studio were professional offices. Students were apprentices learning from more experienced students and the master designer who ran both the office (the atelier) and the class-room (the studio). As educational systems became more formalized, this aspect of architectural education became a limited version of the

original set up. Students continued to learn in the context of design projects issued by the instructor and undertaken by peers in the stu-dio; but this time the entire arrangement was artificial. The project was hypothetical. There was no real client. No monies exchanged hands or professional responsibilities discharged. Students pretended to do a realistic project and the faculty behave as if they may be clients and design critics at once.

Thus the goal of the present studio setting is to simulate, albeit in a very limited sense, the reality of the architectural design office. This is particularly difficult because the precedents that are available to the student in the classroom are usually devoid of the complexities and realities of the world of architectural practice. Clients, officials, finan-ciers, and a host of consultants that normally define the parameters of a design are not present. Furthermore, the instructor who is the only conduit to the world of practice is often removed from practice due to academic responsibilities [5].

Nevertheless, the studio setting creates an environment within which students have to learn to think on their feet and respond intel-ligently to unexpected demands and uncertain design requirements. In spite of the best efforts of instructors who sometimes try to create a manageable world of design possibilities, other, imaginative design critics insist on admitting virtually any design issue, however irrele-vant, into the criticism of a student project. This requires that student's address, during a review session, design issues that they were not pre-pared to address. As difficult as this test may be, the educational value of the experience for the student is invaluable. So long as students can escape some of the detrimental aspects of such experiences, they have a lot to gain. After all, this is not very different from what hap-pens in the professional world of practice.[6]

WEAKNESSES IN DESIGN INSTRUCTION

There are three kinds of weaknesses in design instruction of the kind described above: motivational difficulties, insufficient instruction of the design process, and inefficiencies in learning.

In the case of "trial by fire" type of instruction, unrestricted criticism directed at students' work can become distracting and counterpro-ductive not to mention demoralizing and destructive [6]. Students can pick up on the cynical aspect of such a relationship with faculty and may become disheartened about their own progress, even the partic-ular career choice they may have made. When this approach works, it is done in a premeditated manner rather than in an ad hoc manner. Criticism is carefully delivered; and perhaps most importantly, stu-dents are coached about the rationale of the method and its bene-fits, beforehand.

Owing to its traditional focus on the product-based precedent in the design studio, students are often provided with little or no instruc-tion on the process of design. When students analyze a precedent they start by understanding its physical characteristics and from there they move onto abstracting the conceptual aspects of the design. Nowhere in this picture is there any room for the analysis of process. Unless for some unusual reason the process is manifested in the overt physical characteristics of the final design, such as, building failure Precedents, students are generally uninformed about the process of design. Thus

the present form of design instruction does not support the teaching of process or design methods well enough.

In the situational model of instruction, where the relevance of general design principles, or specific design solutions, for that matter, hinge upon circumstance and chance, students are generally on their own to devise the means to get to the desirable end. Their search resembles groping for a needle in a haystack, since they do neither have sufficient experience to structure their solution domain (i.e., straws) nor sufficient command of their process to adapt it to the problem domain (i.e., clutching at). Analysis of precedents is utilized in structur-ing their design approaches. Derivation of principles of design occurs as a result of the happenstance or the personal inter-ests of the instructor. When there is generalization from exam-ples, improvisation and inducing from very small leads to a good deal of design inefficiency and confusion about instanc-es and principles, result.

THE CASE METHOD

Overall purposes of teaching include a large variety of cog-nitive activities including thinking, sensing and perceiving, learning of facts and theories, reflecting, skill acquisition, applying rules and principles, solving problems, and so on. While there is a dose of each of these in any form of teach-ing, in professional education programs the principal focus of the effort is expended towards how to solve problems. This involves the hands on acquisition of problem solving skills and the body of knowledge that can support the application of these skills to a wide selection of problems. We saw in the ear-lier section how instruction methods geared towards this sort of educational experiences can be both liberating and limiting in certain ways.

The inclusion of such approaches in the educational envi-ronment of the university invariably proves to be beneficial to the intellectual climate of all parties concerned.[8] The general objectives of learning in the university setting actually provide many persuasive arguments for the validity of "learning activi-ty in the presence of knowledge"[22 (pp. 218-219)]. This means that didactic forms of instruction invariably benefit from the inclusion of applications alongside of formal. This point of view, of course, is particularly cogent for professional educa-tion. In fact, for professional education to succeed, the core of the educational experience must consist of the representation of applications and actions in the profession. Thus, it is worth-while to consider a broader sampling of these approaches to professional education.

A particular method developed at the Harvard Business School during the late 60s and early 70s provides a well-struc-tured approach to the area of professional education: the "Case Method" [4]. In this approach, a problem-action con-text is established through cases within which knowledge and skill acquisition takes place. Students not only learn about the underlying principles but also the processes, which are related

to these principles.

The essence of the Case Method is presenting problems through past examples and the context of these cases documented in written form. The learning process centers on the discussion of cases in the classroom. It is paramount that students study the cases before hand and engage in debating the crucial aspects of each case in the class-room. In this way students learn about the principles of the domain through the cases or about knowledge through action. Schn[18], an early student of the method and an influential educator has aptly coined the term "reflection in action" to describe the process that takes place in the design studio which is akin in many respects to the Case Method.

Key roles that the instructor plays in this method are facilitating the discussion around a given case, selecting and presenting the case, and in some instances codifying and structuring the case. All of these are complex and little understood processes. The contributions of the work done at the Harvard Business School are most notable in struc-turing these activities and training instructors in the Case Method.

The successful discussion of cases involves several important goals. First and foremost the discussion section must function as a learn-ing group. Next, there has to be high levels of student involvement. Finally, the instructor must play a role of facilitation and direction of the discussion without dominating it. This is achieved through a prop-er training of instructors and discussion leaders in the case method. This instruction is also structured as case-based learning (aptly so) illustrating the principles of leading successful discussions through case examples collected in the classroom [4].

The other key ingredient of the method, obviously, is the cases. Historically, cases used to consist of brief, at times, cryptic descrip-tions of situations, which then had to be elaborated extensively on subsequent stages of the instruction process. Currently, however, cases have justifiably become elaborate descriptions containing three indispensable aspects: (1) a description of the context that surround each case, (2) description(s) of the various stages of progression the case has gone through prior to its resolution as well as the solution, and (3) a description of the processes or methods that are relevant for these states. It is important to underscore the significance of the latter -- particularly for instruction in architecture -- where the cases used traditionally consist of only context and state descriptions, by and large, ignoring the process aspect.

The corpus of cases and their proper representation is obviously the prerequisite for any successful implementation of this method, regardless of the discipline of application. One of the very important services provided by the Harvard group is the documenting and mak-ing available to other institutions of a rich corpus of cases from which to teach business administration, in the classroom [4].

CONCEPTS OF CASE IN ARCHITECTURAL DESIGN: PRECEDENT

Now that we have considered architectural education in the general and case-based learning as a sympathetic pedagogic approach, let us introduce some terms that are critical for understanding Precedent-Based architectural education.

Let's start with the central concern of the field. An architectur-al problem constitutes a set of those that address the fulfillment of human purposes related to human occupancy, such as visual appeal, mechanical enclosure, or structural integrity. There have been many attempts at succinctly capturing these purposes starting with the ear-liest known treatise on architecture by Vitruvius [21]. This is an impos-sible task for obvious reasons and we are not attempting to undertake it. Rather we want to start with a tautology upon which to construct other more useful concepts.

What then is an architectural product? We know these products as buildings, landscapes, bridges and the like. The contemporary archi-tect however produces designs for physical objects not the objects themselves. In this light an architectural product is the description of a potential solution to a given architectural of problem.

How then is the architectural process related to the product? Similarly, the architectural process is merely a description of a proce-dure useful in solving a given problem. We have seen in the above dis-cussion that both the process and the products of architecture have something to do with precedents. A precedent is previously devel-oped product or process, which can be used to model new solutions in the problem domain of architecture. This is our lead into the discus-sion of architectural precedents, which is the codification of all of the information necessary to describe a precedent used in solving new architectural problems. A precedent-base, then, is the collection of instances or precedents usually codified in a manual or computational database. Finally, Precedent-Based learning is the dissemination and acquisition of requisite knowledge in a domain principally through the systematic examination of precedents encoded in a case-base.

CASE-BASED REASONING

Case-Based Reasoning (CBR) as a method in AI is considered to be the brainchild of Janet Kolodner [12]. Her work developed a comput-er-based system that could browse a repository of cases (recipes), find a match to the problem at hand (preparing a dinner) and adapt the recipe to the problem at hand (prepare a vegan dinner out of vegetar-ian recipes). The technique proved to be not only a powerful genera-tive system but also one that would find broad applicability in other areas. For example, Mary Lou Maher [13] in building an expert system for the engineering design of high-rise structures used a case-base to initiate conceptual design ideas. Even more relevant to our topic here, Rivka Oxman [15] developed a case-base that assists designers in consulting design precedents. Her contribution is particularly salient since she used cognitively based stories that consist of design issues, concepts and form, as the indexing schema to underpin the browsing and matching mechanism of the system. Kolodner and associates [12] also emphasized the importance of this method in the area of build-ing design through their work on ARCHIE, a case-based architectural design system.

As we indicated at the outset, while this literature is important, and there is a lot more of it than what's cited here[16], an extensive review of it is neither practical nor relevant to the current topic, which is Precedent-Based learning in architecture.

PRECEDENT-BASED LEARNING IN ARCHITECTURE

Precedent-Based learning in non-studio courses has a special place in the context of architecture education. Four forms of instruction, didactic, rhetorical, synthetic and experiential have an important place in the context of a full architectural education program. Lecture courses generally rely on the didactic method. Historical periods of style, for example, Mannerism, Post Modernism, Modernism, are defined and illustrated with examples. Students are told what each

of these is and are expected to remember what they are told and how they should use this information, in the future.
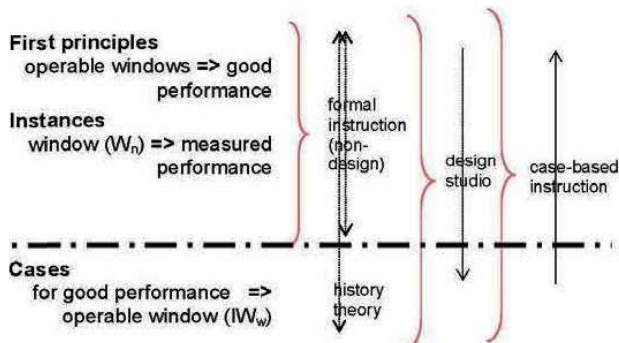

Figure1: Summary of instructional methods in architectural curricula

Seminar classes use the rhetorical method more prominently. They rely on the understanding of sample texts and images from a relevant domain in the context of debate and discussion. Larger principles are derived from these discussions in an inductive fashion, as opposed to the deductive style of lecture courses. Studio instruction focuses on the repeated practice of synthetic skills interspersed with criticism or rhetoric). The primary skill to be developed is, however, generative or synthetic.

Experiential instruction situates the knowledge to be gained into a simulated context provided by a precedent study. This complements the deductive or rhetorical forms of instruction used in architecture education. It balances the abstractness of the other forms and dovetails with the "Precedent generation" activities prominently in the featured design synthesis studio (Figure 1).

Precedents create a fertile ground for exploration of interesting subject matter and unique learning experiences. Students tend to follow the material with greater interest. Their cognitive faculties are not unduly taxed as they learn abstract material. A relevant Precedent study is always handy to connect abstract concepts to concrete examples. Furthermore, Precedent studies lead to engaging exchanges between students, between faculty and students, between students and the Precedent material. This exchange invariably leads to discoveries of new relationships and conclusions some of which have general implications reaching beyond the Precedent from which they are abstracted. Also, the number of Precedents that illustrate any given subject area seem to be surprisingly large. Our application of this method in the classroom started in 1990 in a course dealing with issues of decision-making in architectural design and then included

issues of ethical decision-making in design. In both instances, Precedent stud- ies have abounded. Virtually any building design process if document- ed has important lessons for decision-making and ethics.

Our decade long experience with Precedent-Based learning leaves us with a distinctly positive impression of students' learning and course satisfaction indicators related to the overall approach.

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

Figure 1. Paul Klee, Angelus Novus, 1920.

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"I must reflect on the circumstances — on the mystery of circum-stances which leads the man into paths which he could never antici-pate before they happen. This certainly happened to me because I was to be a painter — without questions about it — until my last year in high school when a course given on architecture just hit me so strong-ly as something that I wanted to be associated with." Louis Kahn (1)

While immersed in an increasingly pluralistic environment, stu-dents' imaginary follows different tracks than the ones of an academ-ic culture taught by teachers in classrooms. How can teachers enter the complex life cycle of students' cultural growth? Explicitly, how can they teach the history of contemporary architecture to a generation immersed in the debris of excessive information, with roots in motion over the wreckage of a globalized context?

The course "APH 405 — Applied History of Contemporary Architecture" experiments on new ways to teach Millennials history of contemporary architecture expanding on their "experiences" of his-tory. By completing assignments as design actions instead of taking quizzes, students build awareness on the reasons why design can not disregard its relationship with history. Most architecture students are alienated from the experience of designing architecture: seeing ways architects composed buildings in the past makes history relevant by fostering personal connections. The course's purpose is to show how to design architecture learning from the past; the goal, to devel-op divergent thinking necessary in design as the ability to process ideas; and the objective, to avoid the multiple-choice quiz in favor of "designing" answers as drawings and movies.

PREMISE ONE: HISTORY HAS A WEIGHT

The course idea originated in 2016 from a general premise: if the discourse of the history of contemporary architecture concerns build-ings, it should have not only words but also a "weight." If architecture has gravity, history of architecture must have too. With this premise, the course's format expressively experiments on ways to weave a Cartesian culture to new forms of visual and simultaneous knowledge, building interaction between history and design. A clear education-al strategy gives life to the above mentioned experience of history, having in mind that students' architectural culture depends on their capacity to interweave history with design. On the one hand, biweek-ly lectures illustrate the continuous flow of historical developments of contemporary architecture; on the other hand, a sequence of five assignments helps students to go deep into one point of the contin-uous surface of history. The two parts elaborate one another to inte-grate into the form of an analog hybrid course 1) to transmit historical knowledge between generations; 2) to leverage plurality of students and teachers' insights as the necessary condition to promote social intelligence; 3) to improve ways to interpret past projects showing his-tory of architecture — on a par with materials and techniques— as a tool to design future ones.
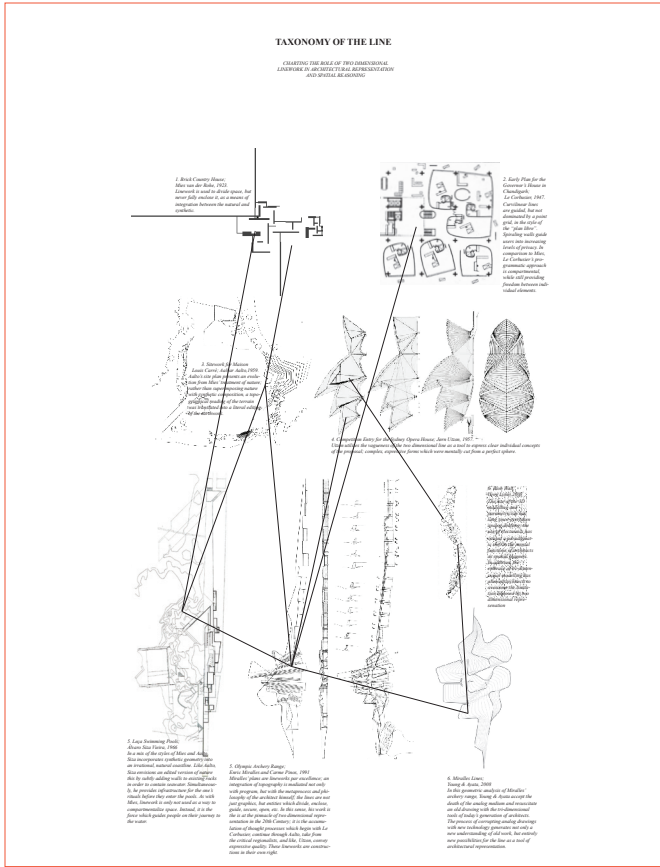
TAXONOMY OF THE LINE

CHARTING THE ROLE OF TWO DIMENSIONAL
LINEWORK IN ARCHITECTURAL REPRESENTATION
AND SPATIAL REASONING

Figure 2. Student Zachary Bundy, Assignment fi e, Fall 2017.

PREMISE TWO: "RADICANTCY" (2)

The migratory dimension of a project is congenital not only to the nature of architecture but to the one of architects. There is an oppor-tunity to teach the history of contemporary architecture as a peripa-tetic journey 1) to visit a generation of architects shaken by the cultural and economic circumstances of an era started between the 1980s and 1990s, and 2) to reflect on how to teach history of architecture to stu-dents who are born, study, and will work in motion. Students of the XXI century are always somewhere else. Exotic rather than national, they are "radicant" as "those plants that do not depend on a single root for their growth but advance in all directions on whatever surfaces pres-ent themselves." (Bourriaud, The Radicant 2009: 51). Nomadism— by far the oldest human subsistence method — is, therefore, the catego-ry emerging from practice, and a paradigm architectural education should consider as the essential part of students' identity: their jour-ney, as the future designers' exodus, is opening up new professional tasks, creating the possibility of leaving tangible signs of migrations as building in new homelands.

A HUNCH: AN IMAGE AS THE COURSE'S FRAMEWORK

To explore the present and future role of teaching practices con-cerning broader pedagogical contexts, one must draw a map for the journey, without forgetting — before leaving — to include the history

of the past. The map might have not only the resemblance of Paul Klee's "Angelus Novus" (1920) but the interpretation Walter Benjamin made in an essay written in 1940, "On the Concept of History." Benjamin's description of the painting he bought in 1921 and hung in every apartment he lived, suggests an angel as his vision of histo-ry made by fragments, "with a face turned toward the past, wreck-age at his feet, blown toward the future by a storm that caught in his wings." (3) Placed in between a debris-strewn present and a future as the historical progress that can not be seen, the angel remains as the immediate present to survey the perpetually unsatisfied expectation of a future revelation. Powerless and undefeated, he is still pushing through the endless storm he survived, a storm that, as Benjamin wrote, we call progress.

The union of Benjamin's interpretation with Klee's depiction of the angel's assembled body builds a dialectal image: an eternally hover-ing angel is dragged away from dust as ruins of history and, at the moment, "his eyes are wide, his mouth is open, his wings are spread."(4) It is precisely the simultaneity of continuance (the dust's movement) and temporariness (the wide-open mouth) what makes the image "dialectical." Past and present converge through a momentary expe-rience — the emergence of new meanings — letting the visible frag-mentation recover its original unity.

The dialectical image is, therefore, the hunch — a method of textu-al analysis for this course. As Klee's particles of dust, past projects can be interpreted as ruins of history rumbling around in a sense to wait for an interpretation as an artistic reenactment. A project with a past historical significance has a "present" as a personal translation — a necessary reactivation of history's waste as the data moving around, the spam, and the debris into which the new generation was born.

THE COURSE

Based on the two premises, the course challenges history as a ref-erence for contemporary design by introducing students to knowl-edge, methods, and tools essential to analyze and critically interpret designed architecture as a "citation" in personal design; with the assumption of the initial hunch, the essential fulcrum of the course is instead to realize that the past is the other useful face of the present a project generates from inside history. As one of the children looking at the camera of Nigel Henderson in the East End of London in 1960, this course pretends to be real. As a claim for students' identity and their ideas of history, it is an invitation to consume and to quote his-tory, relating present and past in a new image. Recovering the tradi-tional relationship between architectural project (present) and history (past) means to renounce to study "history" as a sequence of names and dates as an invitation to students to give attention to objects 1) to have a concrete "experience" of history, 2) to learn how to reflect in-depth, 3) to use the quote in a non-distracted way, and 4) to under-stand personal interests through the making of things.

History of contemporary architecture appears as fragments in books from Gropius to Benevolo. These books report on the dynamics underlying contemporary architecture, full of changes, contradictions, and expressive languages in continuous evolution. The story of histo-ry, mostly unrealistically told in a linear path, does not lead students

to understand recent constructions or the ideas behind them, nor the personalities of the architects. In a quandary over whether choosing one or more of these books, the option is to write an essential history of contemporary architecture as a peripatetic journey.

By using multimedia formats, the semester simulates contemporary architects' propensity to travel abroad to reflect on the phenomenon of nomadism in architecture, and the transportability of ideas. During the journey, students "see" stories of expatriate architects forming biographies abroad together with immigrants, tourists, and wander-ers. In the process of adaptation, they progressively understand how to be part of an itinerant population of future practitioners, peripatet-ic nomads of contemporary culture moving in relational contexts to offer services there where they are needed. Following a progressive acceleration of biweekly lectures and a series of five design assign-ments, as those architects of the 80s and the 90s, they quickly adapt to the unknown regions of the field of history, hunting and gather-ing things they find available across the middle earth of a physical archive, the library. While attending lectures, they retrace the histo-ry of contemporary architecture; and by completing the assignments, they redeem history in the sense of getting more-in-depth in one of its moments. These are the opportunities to find something in them-selves using a work of inspiration, to understand their ideas deep-er, how to make them happen, and to learn how to use quotation in personal design.

The illustrated lectures show past architecture from 1959 to 2014 to primarily observe generations of architects immediately preced-ing and following those years of migrations. The lectures scroll history in a chronological sequence but examine trends and works of archi-tects organized in groups of five years approximatively as a series of critical moments in their careers in connection with time and space they were living. Using the simultaneous conditions of different times and media, the lectures are organized in three parts: "From Modern to Contemporary (1959-1989): This Is Tomorrow," (twelve lectures); "Toward the present (1989-2007): Architecture is Now," (fifteen lec-tures); "Conclusions (2007-2014): Fundamentals, an analysis of the 14th Venice Biennial, curator Rem Koolhaas." Adopting Aby Warburg's con-cept of "Kulturwissenschaft," some lectures' slides show history as a non-chronological narrative — a creative montage of images as trac-es of additional times students touch in the future now. These slides paraphrase history as a montage of quotations, necessary to reveal new meanings of the past in personal terms, showing simultaneously analog drawings as "ghost stories" and digital videos as virtual time.

Students attend lectures with the task to chose one building of the Seventies or the Eighties as a fragment to be around for a semester, following the sequence of assignments, the means useful to experi-ence a previous design's process. By researching and drawing, they gather information to make a movie "to redeem" the selected proj-ect through appropriation. Every assignment generates a dialec-tical image to experience processes and deep intentionalities that led architects to a construction. In this sense, each assignment is a "door" the present opens on the past to experience it temporally — a real place where precedents meet with personal stories, where to encounter the past in a built form, where temporality and eternity

merge. In this sense, the assignments are necessary steps of the "redemption" process as the opportunity for a symbolic value to manifest as a new design.

In combining lectures and assignments, students get famil-iar with how changes imposed by globalization on local and traditional cultures lead toward new professional opportuni-ties. Using "mobility" as the most efficient strategy for exploit-ing the past as a resource, students move around ideas as nomads. While producing images that are dialectical as Klee's "Angelus Novus," they understand that only by casting a rela-tionship to the present the past can survive.

Figure 3. Student Quiara Caguiat, Assignment fi e, Fall 2018.

THE ASSIGNMENTS

The first assignment — a module of active learning built in the lecture's format — is a daily sketch. It helps to construct the classroom's environment as a "scenius" — a collective genius (Eno, 1996). (5) During eight minutes, students draw to learn to quote history, extracting pieces as ruins from lectures to reveal what is lying beyond the threshold of the screen. They draw between the visible and the invisible in the sense of not finding, but still searching. Day after day, the series of sketches compile a "travel sketchbook" as a journey that allows a continuous search during the semester, an encoun-ter, the experimentation, and a search necessary to get closer to the heart of creation, but not close enough. Like the diaries Paul Klee compiled from 1897 to 1918, students' sketchbooks report on their lives as reflections on architecture in the form

of drawings. They are not perspectival but bi-dimensional as orthog-onal projections to train technical ability, imagination, and inventive-ness that comes out in only eight minutes. Each sketch is a scheme: mostly geometric, the narrative of the lecture does not appear but abstraction, necessary to transcend, to detach, to quickly go beyond the threshold, searching for a hidden mechanism of thinking. The sketch is, therefore, the physical and inner analysis of figures to "see", the final result of a reflection on one's thought as a spiritual exercise on history, and the tool to reveal what prevails as a desire to follow to redraw the projects. In fact, once completed, the sketchbook does not only reproduce architecture. On the one hand, in recalling images of major projects made in itinerancy between lectures, it draws the attention on "exodus" not as a forced migration, but as the capacity to export one's abilities in other contexts. On the other hand, from the systematic recording as students' results of their studies, a predomi-nant line of recurring elements emerges, useful for the considerations of one's original way of approaching architecture.

Figure 4. Student Luis Medina, Assignment fi e, Fall 2017.

Through the fifth assignment, this understanding is transferred in the form of a timeline — the personal interpretation of history as the creative montage of images of past architecture, done without words. With the timeline, students search for designing a movement between fragments. Starting from the arrangement of the elements they have accumulated over time, they look for a "binding" material to fill the space in between, just as in the mosaic technique. Placing

and depositing on paper the memory of a migration made in a situa-tionist way, they form a map of a journey already made to remember it: an experience.

The second assignment shows citation as translation. In the library, students search for an original architectural journal with a signifi-cant article about one building. The scope is to explore its relevance concerning broader issues of history. The Journal must be a hard copy and, in this sense, contemporary to the year in which the archi-tect managed the project. Therefore, from the article, students fur-ther "extract" a quote and a drawing to reproduce them. Proceeding from the original to the interpretation, they re-contextualize archi-tects' project as a personal understanding: but in the translation pro-cess, a transformation occurs. After all, it is using words that Benjamin "moves" Klee's painting from inside the physical room beyond the work of art — into a myth. The translation act is necessary for the sur-vival of history, according to Benjamin. In this phase, as the moment of historical knowledge, students start to understand quotation's funda-mental role: being cited, the past is updated in the light of the present.

During the third assignment, done during the second part of the semester, students model the chosen case study as a movie to show its present as life — the coherent movement of a part of the architectural body done with digital tools. More students choose the same build-ing to see its different interpretations and the many ways of reading the story of history. By citing and quoting a past reality through multi-media, students extract it from the historical continuum to know and actualize it, showing that "quoting" can be an updated interpretation.

The fourth assignment is a collaborative lecture on a masterpiece.

By redrawing the project, reporting the architect's thoughts, and adding movement with the making of a movie, students use their methods to confuse architects' voices with their own. The acts of rewriting, redesigning, and citing passages — appropriately chosen and re-contextualized in new sequential structures — are, therefore, quotation acts; translations of original literary work; new moments of life as survivals; transformations, changes, and renewals by which the original is transformed into an interpretation necessary to students to learn. In this way, history is not "stranger" anymore. Its "consump-tion" offers a design experience similar to the one of a personal proj-ect, showing translation as a co-creator act, an iteration that occurs while searching.

CONCLUSIONS

Teaching applied history of contemporary architecture does not only mean spreading the history of architecture but concretely applying it to the problem of the project with the aspiration to reach a wider audience as students from other disciplines, as well as architecture students who have difficulty with design. The future is unknown, but as Paul Klee's "Angelus Novus," history is visible as the present caught in the storm of progress one can cross as a field.

Teachers can enter the complex life cycle of students' cultural growth finding new formats to engage their stories to get deeper in only one particle of the debris as the excessive information in motion. Learning with a generation of expatriate masters means looking at history in their words as recorded in architectural journals, to "make"

a story of one episode in our words. In this educational project, moving from architects to students' identities aims to increase the necessity of awareness of history in general, while the use of dif-ferent formats than quizzes such as films, drawings, and timelines, to develop divergent thinking necessary in design.
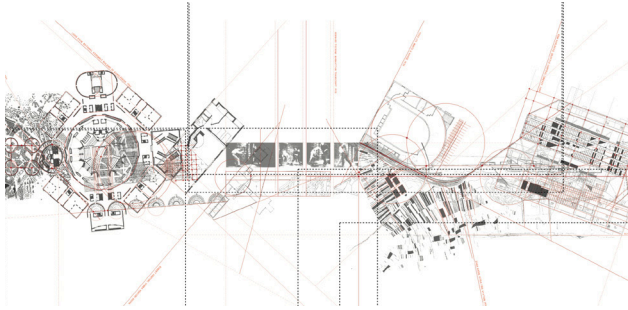

Figure 5. Student Nasreen Chowdhury, Assignment fi e, Fall 2018.

The necessary step to achieve it is letting students choose something they want to study more in-depth, freely: selecting a moment in time transforms history in a real experience to inter-pret the past as a race forward.

Course results and evaluations confirm students' awareness on the necessity of history in design as the ability to process com-plex reasoning, and undoubtedly the achievement of a sense of identity and belonging, showing APH 405 as a model to provide a semester of openness to all, avoiding competition between stu-dents, offering a path in which the race is with oneself.

Conclusions address the critical issues related to passing the architectural history exam with tests and multiple choice quiz — a topic on which the academic world remains divided. This current system helps teachers to manage large numbers of students, but not to regain their role to teach starting from the individual: not in terms of data (measuring mnemonic and notional learning) but of ideas and where they come from, taking into consideration com-plex abilities such as the production of a project using citation.

Activating the passion for what is hidden in personal stories helps to memorize information of history not as names or dates but experiences, necessary to possess history . Teachers must learn from past and present practice how to bring people inside artistic experiences by working in some dynamic excitement.

"Color has taken possession of me; no longer do I have to chase after it, I know that it has hold of me forever... Color and I are one. I am a painter." (Klee, 1914) (6)

at the Tate Britain as the manifesto of the new modernity) identifies globalization in an aesthetic key. The"radicant" is a botanical metaphor, an organization that creates its roots as it grows. Bourriaud's idea is opposite to that of the "radical" which implies instead the sedentary idea of "root." For Bourriaud, contemporary artists have the ability to uproot themselves and easily aggregate elsewhere, in a form of continuous nomadism. Looking at the world through the lens of globalization, Bourriaud's thesis holds that works of art are in constant dialogue with the context from which they come. Bourriaud, Nicolas, The Radicant (New York: Lukas & Stermberg, 2009)

3. "AKlee painting named "Angelus Novus" shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage upon wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress." Benjamin, Walter, "On the Concept of History" in Selected Writings, Volume 4: 1938 - 1940, ed. Howard Eiland and Michael W. Jennings (Cambridge, MA: Belknap Press, 2003): pp. 389 - 400.

4. Benjamin, Walter, "On the Concept of History" in Selected Writings, Volume 4: 1938 - 1940, ed. Howard Eiland and Michael W. Jennings (Cambridge, MA: Belknap Press, 2003): pp. 389 - 400.

5. "Scenius stands for the intelligence and the intuition of a whole cultural scene. It is the communal form of the concept of the genius." Brian Eno, (1996).

6. Diary-note (Tunisia, 16 April 1914), # 926; as quoted by Suzanne Partsch in Klee (reissue), Benedikt Taschen, Cologne, 2007 - ISBN 978-3-8228-6361-9, p. 20.

Notes

1. Falkenberg, Paul, and Namuth, Hans, Louis I. Kahn: Architect, Motion Picture, Yale University, A museum at large Ltd, 1972, retrieved at https://www.youtube.com/watch?
v=ZbE3rmh62x4 on July 31, 2019.

2. With the term "radicantcy" Nicolas Bourriaud (who in 2009 Bourriaud curated the collective exhibition "Altermodern"