

Bricks and books:

Reinventing the teaching of architectural history and theory

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This paper demonstrates a pedagogical approach for the emerging architect through making, crafting, and reflecting in a contemporary architectural history and theory class. The architecture student is not reduced to a passive listener or observant that must consume a series of lectures week after week. Instead this class establishes an environment inspired by the studio culture, where each student has the opportunity to explore, express, and conclude by physical means while reading and learning. The lectures are reduced to twelve throughout the semester allowing more time for assignments designed to foster an exploration of knowledge embodied in buildings and books. Most history and theory classes would mandate two or three books as required reading throughout the semester. In this class the list was increased twentyfold and it was necessary to find a different pedagogical approach that was methodically innovative and diverse.

Juhani Pallasmaa has written extensively about haptic properties and cognition, redefining our pedagogical approaches when teaching. We need architects that are integrative thinkers - that embrace knowledge, skills, and craftsmanship. Furthermore, history is not a continuous sequence of events. This idea is a construction by the human mind. History is much more fluid and can be seen as arbitrary points in time with different weights, an uneven folded line, or a dimension similar to Heisenberg's uncertainty principle in the theory of quantum mechanics. In this theory space and time

are not entities on their own. History is better understood as a field with different points of gravity as opposed to events unfolding in a straight line. Approaching architecture theory with these points of departure stimulates diverse exploration, creativity, curiosity, and logic reasoning among students.

In this course, bricks and books bring together these haptic, cognitive and theoretical underpinnings. Second year architecture students put architectural theory and history into practice by making brick and book covers through structured assignments that prompt extracting and condensing architectural



Figure 1

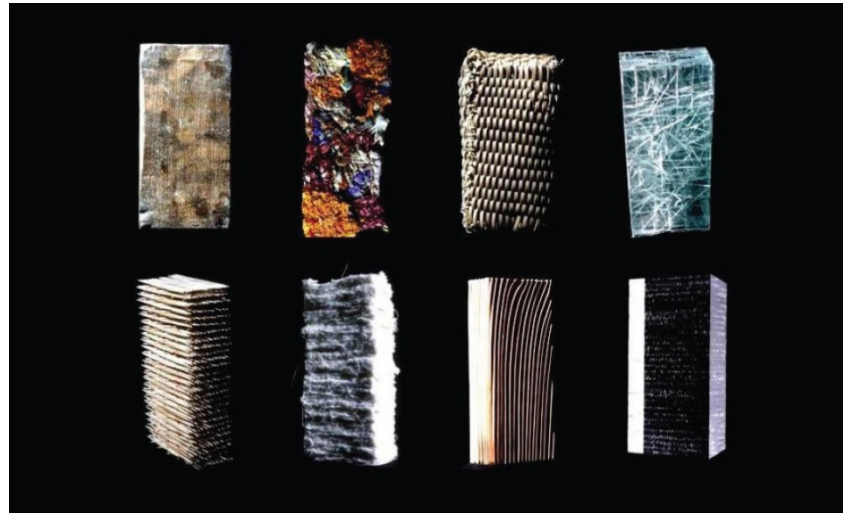


Figure 2

theory and ideas.

In the first assignment students create an object in the form of a brick that must represent or be an extract of ideas embodied in a significant building in contemporary architecture. Students would select a contemporary building from a list handed out by the instructor. In the upper right corner of figure 3 is a photograph of a brick interpretation of Konstantin Melnikov's own house in Moscow, Russia. In the lower right corner is an interpretation of Thorncrown Chapel in Eureka Springs, Arkansas by Fay Jones, and in the very upper left corner is a small photo of a brick interpretation of Bagsværd Church in Denmark by Jørn Utzon.

In the second assignment students read architectural theory and then create a cover for a book of their choice. In this assignment student was asked to find core principals of what a book represents in our field. The cover's presence is to be perceived as an observation and understanding of critical thinking applied to their selected author's work. In both assignments students explore the reduction of form to its most simple essence. This immersion process of analysis paired with the reduction of form forces them to reflect outside of the technologically based studio environment. This in particular aids in opening up a discussion and encouraging group based design development. In this way architectural history and theory feedback into the studio environment in a direct immediate manner. Figure 4 is a poster from an exhibition of the book covers that includes a reading list of the architectural theory books and list of students. Notice that the book covers are initially presented to the entire class while in the architectural library at North Dakota State University. Figure 5 shows two students presenting their book cover for Thinking Architecture by Peter Zumthor. A few days later in class each student and their

collaborator presents their research as seen in figure 6. From a pedagogical point of view it was important that all the architecture students were included in the instruction of the class. Final book covers and reading extracts from the architectural theory books were presented as seen in figure 7.

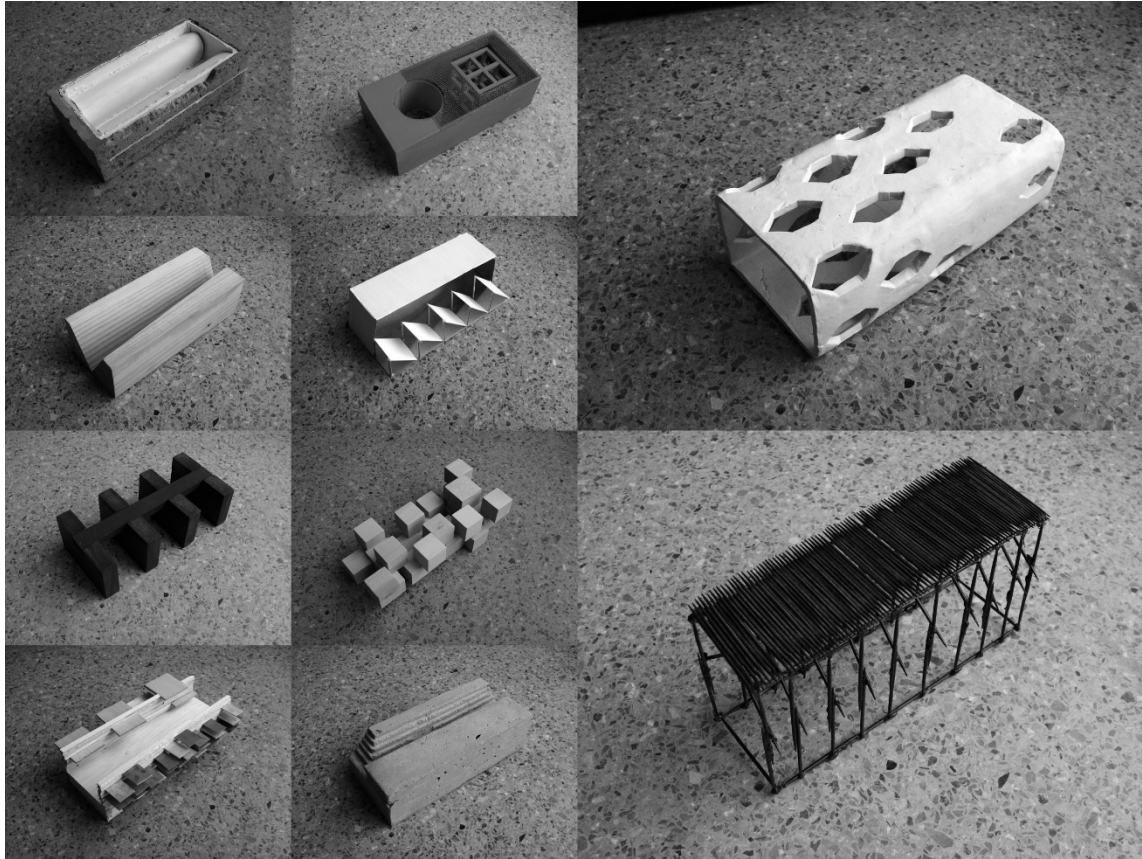


Figure 3

The author did not invent the two assignments presented in this paper. The brick assignment was introduced by Pia Sarpaneva when she taught at the School of Architecture + Design at Virginia Tech, however, it was Juhani Pallasmaa in collaboration with Pia Sarpaneva who came up with the idea for this assignment when teaching in Helsinki, Finland. The author has never taught this assignment together with Pia Sarpaneva, it was the bricks left behind by students - and the fact that a mouse had eaten half of a brick - that made lasting memories, see figure 2. The book cover assignment was created by associate professor Margarita McGrath while she was teaching a professional practice class in the School of Architecture + Design at Virginia Tech, see figure 1. The author worked with teaching assistant and former student

Niloufar Alenjery who is now an architectural designer and project manager at Atelier New York Architecture and the author also worked with teaching assistant and former student Shane Hawley who

at the time of writing is a graduate student at the Department of Architecture & Landscape Architecture, North Dakota State University. Here are extracts of questions and reflections from teachers and teaching assistants involved in the assignments:

exhibition & 28 books in the library at Klai Hall 10.13.15 / 10.29.15

students

Hannah Rummel + Whitney Lee + Jacob Scott
 Ryan Gapp + Nicholas Hölzer + Victoria Noc
 Carissa Hillen + Haley Heintzman + Mitchell N. ...
 Amy Mueller + Riley Qualley + Marie Tucker + Dane Vonasek
 Tyler Bassett + Ashley Kiltzer

Paige Falk + Joe Bakke + Connor Grann + A. ...
 Joseph Bakke + Meaghan Hawley + Zachary Jewison

James Jaeger

Shaun Rolles

Benjamin Mach + Riley Qualley + Carri Roberts

Justin Brown

Lindsay Olson
 Augustin McLaughlin

Dominic Blindert
 Danielle Lee

Cole Alexander + Joe Steinman
 Frankie Haller + Amanda Moy
Jennifer Eggen
 Makayla Lakeman + Sarah Watson + Emily Fagley + + Rachel Marsh

Regin Schwaen, Associate Professor
Nicolaus Alenjaery, Teaching Assistant
 Department of Architecture & Landscape Architecture

books

Aldo Rossi [The Architecture of Intensity]
 Claude L. Moore [The Architecture of the City]
 Peter Zumthor [Thinking Architecture + Photographs]
 Geoffry Sempster [Style in the Technic: Land Actions, Arts or, Practical Aesthetics]
 Kenneth Frampton [Modern Architecture: Studies in Critical Culture]
 James Corner [Taking Measure: Across the American Landscape]
 Daniel Libeskind [Line of Flight: Jewish Museum, ...]
 Oswald Mathis Ungers [Morphologie City: ...]
 Christian Norberg-Schulz [Genius Loci: Toward a Phenomenology of Architecture]
 Peter Eisenman [House X + Fin D'OUV'RHU S]
 Le Corbusier [Towards a New Architecture]
 Robert Venturi [Complexity and Contradiction in Architecture + Learning from Las Vegas]
 Giuseppe Terragni [Danteum by Thomas L. Schumacher]
 Miles van der Rohe [Mies in America + Mies in Europe]
 Carlo Scarpa [The Complete Works by Francesco Dal Co and Giuseppe Mazzarini]
 Giovanni Battista Piranesi [The Complete Etchings collected by John Wilton-Egby]
 Marcel Breuer [The Four Seasons of Architecture]
 Andrea Palladio [The Four Books of Architecture]
 Ettore Sottsass [Bouillie and Visionary Architecture by Helen Rosenau]
 Claude-Nicolas Ledoux [Claude-Nicolas Ledoux by Anthony Vidler]
 Juhan Palta [The Eyes of the Skin: Architecture & the Senses + The Thinking Hand]
 Louis Kahn [Essential Texts by Louis Kahn edited by Robert Twombly]
 John Hejduk [Education of an Architect + Victims]
 Marco Frascari [Monsters of Architecture + Eleven Exercises in the Art of Architectural Drawing]
 Rem Koolhaas [Delirious New York + SMLXL + Elements]
 Leon Krier [Houses, Palaces, Cities]
 Rodrigo Perez de Arce [Urban Transformations and the Architecture of Additions]
 Paul Virilio [Bunker Architecture]
 Italo Calvino [Invisible Cities]
 Michele Serra [Parasite + Parasitis]
 Wayne Dossell [The Other: Fiction]
 Robert Smithson [The Collected Writings, edited by Jack Flam]
 Gordon Matta-Clark [Works and Collected Writings edited by Gloria Moure]
 Richard Serra [Writings/Interviews]
 Adolf Loos [Ornament and Crime]
 Alberto Perez-Gomez [Architecture and the Crisis of Modern Science]
 Bernard Tschumi [The Manhattan Transcripts]
 Peter Cook [Archigram + Architecture: Action and Plan]
 Witold Rybczynski [How Architecture Works]
 Steen Eiler Rasmussen [Experiencing Architecture]
 Jan Gehl [Life Between Buildings]
 Carsten Juel-Christiansen [Monument + niche]
 Lebbeus Woods [Origins]
 Reyner Banham [Los Angeles, The Architecture of Four Ecologies]

Figure 4



Figure 5

Thinking Architecture

In *Thinking Architecture*, Zumthor emphasizes the unique and poetic role that materials play in his buildings. We decided to show this concept by inseting the book within a section cut of a tree to link the intangible concepts of the book to the tangible aspects of the tree. Peter Zumthor's design principles and consequently the buildings he designs, show both a strong connection with the environment as well as a fourth dimension of time. These are illustrated by both preserving the trunk with its texture intact as it would be in nature and exposing the tree rings to show the role of time in design. The book and the glass are also both perfectly inset and flush within their resting spots which shows the complete, planned and nature of the design. Joined together these elements emphasize a strong connection between the theory of the book and its application through practice



Figure 6

Questions for Pia Sarpaneva:

When did you first introduce the brick assignment to architecture students?

"I think it was in 1989 or 1990 at the Helsinki University of Technology (the school merged into Aalto University in 2010)."

Why did you have students make their own brick?

"The way the teaching was focused regarding first year architecture student was not to go into abstractions but to invoke imagination. The idea was to make an object the size of the hand. In term of size and proportions the brick is made for the human hand. This is a tactile exercise and the students could use any material with an object that has six sides. This way the students had

six opportunities to communicate a different aspect of the material chosen, that way the exercise is quite analytical but it ends up being tactile.” See figure 2.



Figure 7

This makes me think of Juhani Pallasmaa reflections in his book The thinking hand and I assume that both of you taught this particular assignment together?

“Yes, we did and it was taught in the Helsinki University of Technology in Otaniemi, Espoo. We wanted to teach the basics of architecture. You start this way and you would work your way on to space... ... and essential questions and subjects in architecture.”

Did you have any restrictions regarding the brick assignment?

“...We had rules. One of the rules was that there was not to be any kind of visible means showing how the brick was constructed such as glue or anything similar.”

Did you hope that the outcome would influence the way architecture students make decisions in other areas?

"Yes, of course, Juhani Pallasmaa was already thinking about those things... ..on of the following exercises was a Museum of Memory, made in 1:50 scale, and it was really beautiful because students started with the materiality and tactility learned in the brick assignment."

Was there one student project in particular that stands out in your mind?

"... One brick that I remember vividly was a brick made of perch fish.... .. not in terms of inventiveness but in terms of the way it was used, this fish is slightly larger than herring. It is a lake fish and is the size of your hand, it is a little tigerish in appearance, and the student had arranged the fish accordingly to the dimension of the brick. On the back side we could see the tail, on the large size we see the size of the fish, and opposite she had cut the brick so we would see the section of the fish. This was like as if somebody like Marcel Duchamp had made this brick, who is an amazing artist, in a way the brick had become an extract of the fish, a brick with incredible surfaces of the fish, highly communicated and entirely informative of the fish, a kind of scientific exhibition but surreal at the same time."

Questions for Niloufar Alenjery:

Was it difficult to make an extract from an existing building and shape those observations into the form of a brick?

"At first it seemed challenging, but once I started researching and exploring the making of the brick it all started to unravel. Drawing the connections from an already built work of architecture and reverse it back into an abstract building material required a kind of creative thinking that can cycle through the making process."

What did you learn from the brick exercise?

"As mentioned above, this assignment required us to actively go back and forth between the assigned building and what it could be if it were to shrink down into one single piece that is essential to its very characteristics. That is an exercise for creative thinking. Also, this exercise made all students more familiar with the nature of materials they chose to work with, as well as the ways they could use them."

What did you learn from the other students who did the same exercise?

"Architecture happens when there is a dialogue. I think this dialogue can manifest through observation, writing, reading, and of course speaking. With this assignment, I had the opportunity to see what my colleagues were doing and discuss their design process and findings. These are critical factors in the practice of architecture where they can be translated as collaboration and communication."

Do you think this was an effective way for an architecture student to look at a building in a theory class?

Architecture students often fall into the trap of reducing the practice of architecture to the technical parts and building codes. I don't believe this is true. Assignments such as the brick exercise provide the opportunity for students to think beyond the norms of conventional practice rules. Students learn to look at their built environment differently, and as a result, their creative thinking process will be challenged."

What difference did it make for you from being a student to being a teaching assistant for this class?

"As a teaching assistant, I had to speak to a wide range of students and help them continue their research and elaborate their design, whereas my concerns as a student were more shaped by personal views. So in ways being a TA helped me expand my perspective towards design and share my thoughts with a larger audience. This act of sharing was of course mutually beneficial. Through this sharing, both the students and I learned how to develop critical discussions and to push for a more aware design solution."

Does this assignment have anything to do with the history of architecture?

"I would say it does. The beginning part of this assignment is research-based. Therefore, students need to explore and learn their building deeply so that they can extract what is embodied in its history/ identity and draw the relevant metaphors from it. This is the only way they can produce a successful work in the form of a brick."

Does it have anything to do with theory?

"Theory of architecture can be defined in different ways. The architectural theory involves dialogue (as mentioned earlier). Therefore, if an assignment initiates a conversation, then it can be associated with theory. From my experience, this assignment started out as a conversation, and the final reviews ended with an active conversation between students and instructors. That being said, we can see how it relates to ways of architectural theory."

Is it your opinion that it is important for architects to have a haptic experience like this?

"Of course. Architecture is the play of all of our senses (as Juhani Pallasmaa has indicated in many of his writings). Students need to learn that the practice of architecture is not merely a linear path where the only connection from the design/designer to the final built project is a digital screen and a few clicks. Sensitive work comes from sensitive decision making and exploring what surrounds us. If we don't start looking for the unfamiliar, then we can't expect a shift from homogenized architecture to something more meaningful and relevant."

Was there one student project in particular that stands out in your mind?

"Yes, the one that I can remember was the Brick model that was made based on The Geisel Library in La Jolla, California. I saw this structure a few years before I entered the architecture program and at the time it looked very interesting. So, when it was assigned to one of our students, I was excited to see what she will be doing with it. This building was finished in 1970

and was a steel framed structure, although later it was changed to concrete for cost maintenance reasons. I remember this student made a beautiful translation of the structure by casting concrete in one piece. It had this monolithic feel to it. Simple but strong, similar to the way the building is. She was successful to show not only the structural system in a brick form but also the architectural aspects were present in an honest way. It was as if the whole building and its elements were simplified into one of the most fundamental construction pieces of architecture. Therefore we could see that she had done a thorough study and understood both the architectural and structural qualities of the building. It also spoke of her informed choice of material which best identified the library in the brick she made."

Do you have a question that you would like to include?

"I can't think of a particular question to add, although I came across this text by Dr. Alberto Pérez-Gómez that I think is quite relevant to our discussion:"

As embodied making, architecture is not only a means of formal discovery, it is also a vehicle for ethical production. This form of relationship between theory and practice, between words and process, is obviously not unprecedented in art, but has traditionally been less prevalent in architecture during the transformation of Western culture into modernity. -- Pérez-Gómez



Figure 8

Questions for Shane Hawley:

What did you think when you first learned about the book cover assignment?

“Finally someone understands... ..that physical haptic interaction increases your interest in learning.”

What do you think about libraries, the search for knowledge online, and the way a traditional book cover works?

“To be apart of a class that creates a form of traditional library research for a project is incredible. The amount of money and time that goes into the creation of a reference book makes the information’s credibility more accurate and precise in comparison to online facts.”

What did you learn from the other students who did the same exercise, see figure 8 of example of another book cover?

“You can clearly see the separation of those students with a deep artistic understanding and those with more of a pragmatic approach.”

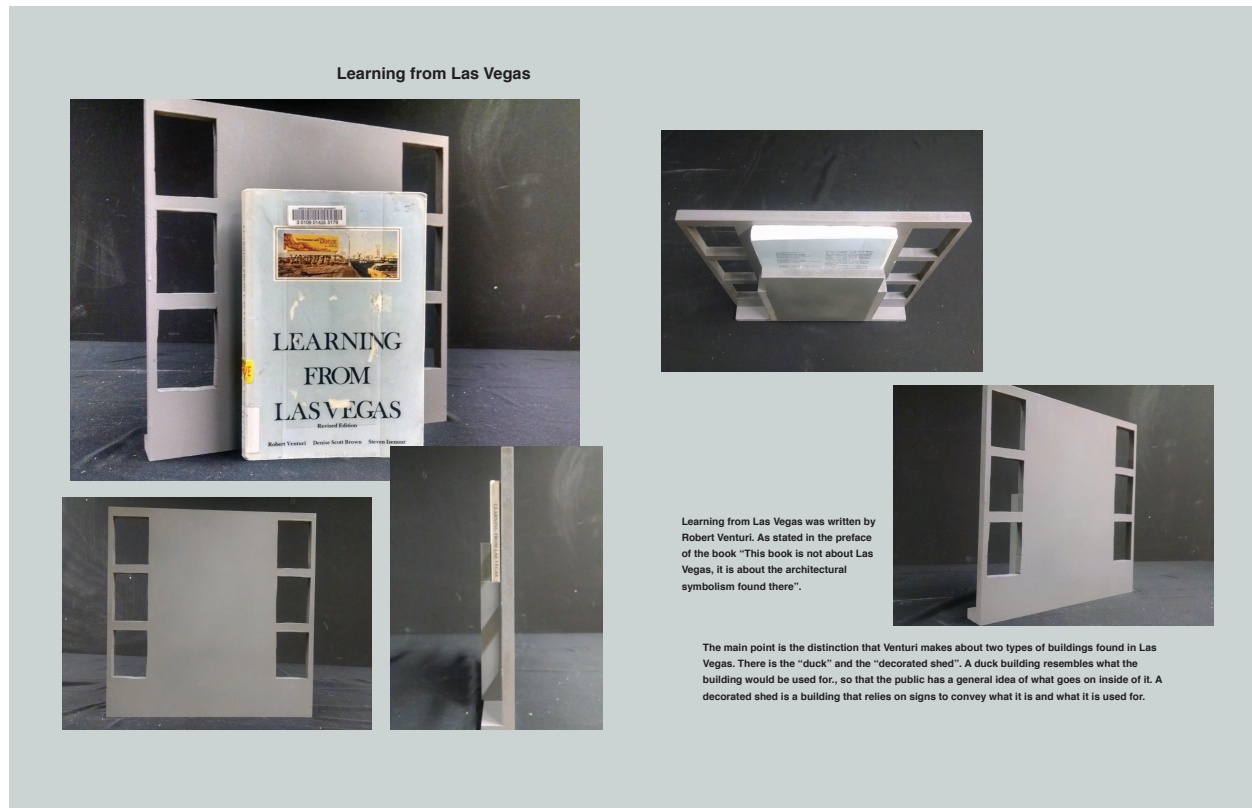


Figure 9

Is it your opinion that it is important for architects to have a haptic experience like this?

"Without this (the haptic) architects share no commonality and no longer share anything but three dimensional observation on a two dimensional surface severing the connection with physical reality."

Does the architecture student become better architects after making their own book cover?

"Their perception of the book shapes their understanding about how another architects design thinking leads them into their decision making."

Questions for Margarita McGrath:

When did you introduce the book cover assignment to architecture students?

"In 2003 I was given a new teaching assignment. I was asked to teach Professional Practice, a class that I quite literally slept through as an undergraduate... ..I remember the struggle of

constructing the course. Although I was one of the few licensed architects on the faculty in Architecture at Virginia Tech at that time, I felt totally unprepared. Over two thirds of my eight year's of professional experience had been spent abroad, and I'd been exposed to a very limited slice of practice. I think the only time I'd seen an AIA contract was in reviewing class handouts to prepare for a test in my own undergraduate Professional Practice class. So I started from Vitruvius, Ten Books On Architecture, Chapter I: The Education Of The Architect."

It follows, therefore, that architects who have aimed at acquiring manual skill without scholarship have never been able to reach a position of authority to correspond to their pains, while those who relied only upon theories and scholarship were obviously hunting the shadow, not the substance. But those who have a thorough knowledge of both, like men armed at all points, have the sooner attained their object and carried authority with them. -- Vitruvius

Why did you have students make a book cover?

"As you can see from the assignment below the aim was to create a bridge between how we approach architecture in the studio and practice. I both wanted to connect the class to the roots of the discipline, as well as to engage practice as a design problem. We teach this class to fourth year students, and at that time a majority of the students were only exposed to the seminal texts in the discipline through their studio professors. It seemed to me that in order to be prepared to talk about how to practice we should each read a treatise". See figure 1.

Readings:

The primary readings will be two books, something old and something new:

A seminal treatise [your choice, list of suggested readings follows].

e2: Exploring the Urban Condition, edited by group e2, Paris: Ingo Print, SA., 2002.

Taking Measures Across the American Landscape James Corner

Landscape architect James Corner enlists the help of photographer Alex MacLean to travel the continental US by air documenting the changing typography of our landscape. The book aims to answer the question what were the major contributors to our changing landscape? The answer stretches as far back as the native populations of the southern United States to the most modern technology advances altering it today.

Corner attributes our landscape as "American" because of the way we choose to lay out our roads, fences, hedgerows, farms, canals, levees, ect... The book also pays particular attention to how we define the word "measure" and relates it back to five major fields (land, control, rule, fit, and faith). Lastly, Corner enlightens us how our future landscape will look and how to take improved measures dealing with our environment such as irrigation and transportation.



Figure 10

Book case:

Make an appropriate physical cladding for exhibit of your selected treatise. You will also be expected to 'make the case' for your author's point of view in class discussions throughout the semester.

"Our students at Tech are the best of the best (often the highest number of valedictorians in their high school class of all departments in the University), but there is a difference between 'studenting' and 'studioing.' This is where MAKING the book case came in."

What about libraries and how a traditional book cover works?

"I enjoy that you've brought this into the assignment. You can see this as a 'shadow' discussion of how a building façade works as well. I think the primary thing I took away from my first background in Art History was Aby Warburg and his Mnemosyne Atlas... ...To be honest, I don't pay any attention to Warburg's metaphysics. What I'm interested in is the Atlas's relationship between books and images."

Is it your opinion that it is important for architects to have a haptic experience like this?

"This is the "red / blue" button in architecture, which I find boring. I am interested in the work, and see the world as a tool kit. You can MAKE with a wide range of tools. I think the problem that digital work carries is that it started out in a form-centric arena. That it was used to establish how things looked rather than to explore how things worked. My tool of choice for thinking right now is 'drawing' in Photoshop – it's a tool that allows me to draw with images (as one might draw with lines with a pencil). I think the strength of your starting the semester with the brick assignment is that a brick comes pre-loaded with function, scale and scalability, as well as a cladding role."

Are you still teaching this assignment and how many years did you have students do the book cover assignment?

"I only did it that one time. I look back now on this first version of the professional practice syllabus and see strengths in the class that got washed out when I realized that this class had to carry the brunt of the NAAB accreditation criteria. The premise that a treatise could be just as important as an AIA contract in practice – a decade later with a second accreditation visit due in three weeks – seems in hindsight an audacious assertion!"

What do you think about teaching the book cover assignment in a theory class?

"I have only taught two theory classes, one at the University of Utah in 2000 - 2001 and one on Cubism with Kay Edge, Associate Professor, Virginia Tech. Like you, we took a similar approach and the students read and made. I can't remember the assignments, but recently I came across images of an exhibit that the Utah students made with large hanging plaster scrim and beach-ball sized papier-mâché spheres with horizontal slots that allowed one to look inside."



Figure 11



Figure 12



Figure 13

References

1. Alberto Pérez-Gómez, *Architecture and Ethics Beyond Globalization / Auf der Suche nach einer Theorie der Architektur*, Hartmut Frank & Elke Sohn Materialverlag, HFBK Hamburg, 2004, p. 11.
2. Marcus Vitruvius Pollio, *Ten Books On Architecture*, Harvard University Press, 1914, p. 5.

Figures

- 1 Book cover assignment. Example of student work from a professional practice class taught by Margarita McGrath.
- 2 Brick assignment. Examples of student work from a class taught by Pia Sarpaneva.
- 3 – 5 Examples of student work from a brick and a book cover assignment taught by the author.
- 6 Research and book cover presentation by NDSU architecture undergraduate students Linda Boateng and Benjamin Djerf.
- 7 – 8 Examples of student work from a book cover assignment (figure 8: SMLXL, Adolf Loos, Italo Calvino) taught by the author.
- 9 Research and book cover presentation by NDSU architecture undergraduate students Andrew Ulrich and Grant Willert.
- 10 Research and book cover presentation by NDSU architecture undergraduate students Amy Mueller and Riley Qualley.
- 11– 13 Book covers made by NDSU architecture students on display in the Klai Juba Wald Architectural Studies Library. The installation on the book shelves was done by Debbie Aaker, Library Associate, and Jenny Grasto, MLS, Head of NDSU Libraries.