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OCTOBER 13, 2014
Volume 94, Issue #3
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The Pioneer

LESSONS FROM “LESSONS FROM MODERNISM”

PRANAV JONEJA (ME '18)



Photo Credit: Winter Leng (ChE '18)

On Thursday, October 2, Cooper Union welcomed Professor Daniel Barber, Associate Chair of the Department of Architecture at the University of Pennsylvania, to deliver a free, public lecture on how structural design responds to the environment and to global climate change.

The Rose Auditorium hosted Prof. Barber as he took his audience through the historical progression of an architectural movement he calls “environmentalization”, which he described as a specific undercurrent of the larger modernism movement of the 20th century.

As an architecture historian, Prof. Barber studies how other architects consider scientific and historical knowledge of the global environment and incorporate them in their own work.

In his talk he cited the work of Victor and Aladar Olgyay, pioneers in the field of bio-architecture in the mid-century, as an example of using purposeful

structural design as a means to maintain the climate in a space. He emphasized the benefits of this approach, as opposed to mechanical systems, for heating, ventilation and air-conditioning (HVAC) implemented in almost every modern high-rise. The Olgyays researched a precise definition of the universal comfort zone, which involves the optimal balance of environmental parameters such as temperature, humidity, and sunlight. To maintain this balance, the Olgyays designed the *brise-soleil*, a sunshade that deflects sunlight, which is now a commonly used structural feature in landmark buildings, such as the UNESCO headquarters in Paris and The New York Times building.

In the informal Q&A session following his lecture, Prof. Barber also commented on the need for more open and frequent public discourse on this matter. He voiced his opinion about changing the conversation to refrain from discussing

how previous decisions in history have resulted in the current climate crisis, and instead move towards openly discussing what needs to be done now. He said “we’re sick of hearing about how we *should* have done it differently”. They say hindsight is 20/20 and there is no doubt that learning from mistakes made in the past can prevent foolish repetition of the same mistakes. However, the need for clairvoyance is now and decisions for our future must be made in the present. Responding candidly, Prof. Barber echoed this sentiment by saying that “[we could all spend time] marching up and down 6th Avenue” (in reference to the People’s Climate March on September 21), but the political interpretations may not align necessarily with what needs to be done for the climate.”

For more information about future lectures and public events hosted at The Cooper Union, check out www.cooper.edu/events-and-exhibitions/ ◇

THE RED LIGHT DISTRICT PROJECT

ANUSHREE SREEDHAR (ChE '18)

On September 22nd, a troupe of students hurriedly made their way to each room in the dorms, with a huge bucket of lights in their possession. When I opened the door to them, they quickly stated their plea, and left a whirlwind of red lights in their wake. These students are part of Free Cooper Union, which protests against the unfolding tuition debate and student debt crisis. We hung up the lights they gave us and in twenty minutes, the entire dorm building was flooded in red lights. People on the street stopped, stared, asked questions and left in awe at the amazing unity of the residents in the dorms.

The idea for the “Red Light District Project” stemmed from the Quebec student protests that occurred in 2012. During

these rallies, students wore red squares to protest the dramatically increasing tuition they faced. In addition, The Cooper Union alumni and upperclassman made the huge clock in the Peter Cooper suite red during their occupation. Reflecting on these two situations, a group of freshman in the dorms decided to implement these ideas into a form of a visual protest. Believing that the freshman would be upset with the newly instituted tuition and administration, Free Cooper provided a way for freshmen to voice their opinion without hesitating to display dissent. “We wanted to give them an opportunity to speak anonymously, show solidarity to students who were participating,” comments a freshman who wished to remain anonymous.

Since September 22, Free Cooper put together another Red Light District. “The first Red Light District was a practice pitch that we assumed would be an instant strike – like in baseball – but the second one was a 90 miles per hour pitch. That one hit home for us,” affirmed another anonymous freshman. The impressive turnout was quite unexpected, yet wholeheartedly welcomed. “We totally didn’t expect everybody to be so eager to participate. We had to go out and buy more bulbs and do it again, because people were like ‘Where’s my lightbulb?!’” remarked the first anonymous freshman. “Hopefully upperclassmen realize that this isn’t over. Just because we came and we paid doesn’t mean any of this is over.” ◇

ANALYSIS EXHIBITION OPENING

EVAN BURGESS (Arch '15)

In the architecture school, the word “analysis” has a rather specific meaning. It is a type of project that involves looking extremely closely at one object or building, and producing your own drawings or models that explore and emphasize specific aspects of your subject.

Analysis is in the spotlight in the architecture school right now for two reasons. The first is that both the secondyear and thirdyear studios are working on analysis projects, under professors Agrest and Rustow respectively. The second reason is that the Architecture Archive has been working tirelessly over the past months to set up an exhibition that covers the past

fifty years of analysis projects at Cooper Union.

In the five-year architecture school curriculum, one semester will typically be devoted to an analysis project, and this tends to happen in either second or third year. For the current fourth and fifth year students, the analysis semester was the first half of a year-long project about libraries, in which the analysis of a library would lead to students designing their own libraries the next semester.

The second-years and third-years are currently analyzing a selection of the great buildings from modernism, pulling out concepts such as movement,

circulation, sequence, form, and the passage of air/light/bodies. Some of the third-years are enjoying it, some describe it as being too broad, and Ian Houser (A '17) says, “I think it’s fabulous.” Joey Parella (A '17) commented that the most useful type of analysis project is “analysis with an agenda, working toward the studio at the end.”

While the second-years are suffering under the typical second-year workload, Yasuyo Tatabe (A '18) commented that the project has made her unable to look at a building passively anymore. She says, “I became on the side of the creator instead of the observer. Analysis made

(† continued on back)

Peter Cooper
IN THE FUTURE

JAKE POTTER (ME '16)

EPISODE EIGHTEEN



(† continued from front)

me be on the creative side. Now we see the world differently.” In light of the current analysis work that is happening, the archive’s analysis exhibition will give students the opportunity to look into how this problem has been handled in the past. The architecture school is relatively young, and the archive has been working to gather models and drawings from the very beginning of the school, in 1965, up through the present. Steven Hillyer (A ’90), director of the archive, has been working around the clock with professor Guido Zuliani to select work and collect original models and drawings from their creators.

The show will be opening on Tuesday, October 14, at 6:00pm in the Houghton Gallery. ♦

SUMMER EXPERIENCES:
ALLISON TAU (ChE ‘15)

SAIMON SHARIF (ChE ‘15)

The Cooper Pioneer interviewed current students from the art, architecture, and engineering schools about their summer experiences. The interviews will be published as a series. We hope they will serve to highlight the diverse achievements of our student body.

Here is our interview with Allison Tau (ChE ‘15).

The Cooper Pioneer: Where did you work?
Allison Tau: I was part of an REU program in engineering education at Olin College of Engineering. My project involved using a method called discourse analysis to look at transcripts of student team meetings in undergraduate design courses.

TCP: What was your daily routine?
AT: I worked with ten other students (and later two K-12 teachers) in the same studio for five days a week, usually 9 to 5ish. Studio culture could get distracting, especially because we were all friends, but it also created an environment where we all knew what each other was working on and could share relevant information about each others’ projects. We had research meetings several times a week where we could talk about our work and hear from other students doing research at Olin who weren’t a part of the REU. My favorite part of each day was “tube-thirty”, a break the other REU students and I took at 2:30 every day to watch YouTube videos.



Photo provided by Allison Tau (ChE ‘18).

the school of architecture,” says Hillyer. “The concept of looking at an architectural precedent is important. There are valuable keys to an understanding of architecture through the study of a significant work.” He adds that “the analysis of the object has been a varied component of observation and analytical thinking here... something as simple as a bow and arrow, the domestic object... even a year of thesis when everyone was looking at fruit. So this concept of analysis, while grounded in a semesterlong endeavor, has had other forms here over the years.”

The show will be opening on Tuesday, October 14, at 6:00pm in the Houghton Gallery. ♦

TCP: What was the best part about your internship?
AT: It was really rewarding to be a student researcher rather than just a research assistant. My partner and I were able to take our own direction with the data we had. If we needed more direction, our mentor was able to provide guidance, but for the most part we had the freedom to study what interested us. The other best part of my program was being able to interact with other engineering students with similar interests from across the country.

TCP: How was it different from what you’ve done thus far?
AT: Behavioral sciences research is an entirely different animal compared to technical research. It uses a mixed-methods approach, so you have to be comfortable with both quantitative and qualitative methods. Technical researchers tend to be skeptical of qualitative analysis, so you have to be prepared to defend your findings and know the ins and outs of your work.

TCP: What do you feel was the biggest takeaway from the experience?
AT: Doing research in engineering education has given me the opportunity to reflect on my own experiences as an engineering student. I read a lot of literature within the field of engineering education, so it gave me a fresh perspective on my education as well as something to think about this upcoming year.

FACES OF COOPER: ANITA RAJA, COMPUTER SCIENCE

BRENDA SO (CE ‘18)

The Cooper Pioneer recently sat down with Professor Anita Raja, who is the new Associate Dean of Research and Graduate Programs and a new computer science professor.

The Cooper Pioneer: Where are you from?
Anita Raja: I was born in South India and grew up in the coastal city of Chennai. I came to the U.S. as a teenager to do my undergraduate education. I have since lived in Philadelphia, Western Massachusetts, North Carolina and now, New York.

TCP: Can you tell me about your educational and professional background?
AR: I received a B.S. in Computer Science and a minor in Math from Temple University followed by a M.S. and Ph.D. in Computer Science with a focus in Artificial Intelligence and Multiagent systems from the University of Massachusetts Amherst. My Ph.D. advisor is considered one of the founders of Distributed Artificial Intelligence and I was his 25th Ph.D. student. I feel blessed to be in the company of an incredible network of peers many of whom are doing cutting edge research in Artificial Intelligence and Robotics. Immediately after graduation, I accepted a tenure-track position in the College of Computing, becoming the first female faculty in the Department of Software and Information Systems at UNC Charlotte. I was excited to grow the theoretical contributions I had made to the field. I received tenure in 2009. One of the highlights of my time at UNCC was working with students and collaborating with researchers (from both academia and industry) from diverse areas ranging from Economics, Electrical and Computer Engineering to Visual Analytics and Political Science. I have been the primary research advisor for two Ph.D students and dozens of undergraduate and Masters level students.

TCP: What brought you to Cooper Union? When did you start working at Cooper?
AR: I was interested in moving back to the northeast since most of my extended family is in the area. I had spent my sabbatical in 2011 at Columbia University and looked at several schools in the New York area. I got to know about Cooper when I consulted on a project last spring and met some incredible faculty and very bright and engaged students from the school of engineering including Sharang Phadke

(EE ‘14) and Eric Leong (ME ‘14). I started working here in early August 2014.

TCP: How much do you like your job at Cooper?
AR: I have been on the job only for 2 months and it has been an interesting time. Clearly, this is a school in transition. The Cooper community is struggling with change and the fear and uncertainty that accompany a new vision for the future. However, I believe this can be an opportunity for learning and growth for everyone as we ensure Cooper’s future. I love being an educator and a scientist



Photo Credit: Vincent Wai Him Hui (Arch ‘15)

and I think Cooper will afford me the opportunity to contribute in both areas. So I’m excited. Currently, I am working on facilitating faculty and student research at the Nerken School of Engineering while continuing research contributions to my own field. Cooper is known for its traditional and very successful teaching methods so the last thing I expected was to learn about innovative pedagogical methods for online education while at Cooper. But that is exactly what happened. The first day on the job in August I was informed that Cooper had won a highly competitive edX grant to create two Advanced Placement MOOCs for high school students and that I would be project director. I was new to the world of MOOCS but in the past two months I have learned a whole lot about the world of MOOCs, new pedagogical methods, role of video production, attended an edX training session and visited the edX main offices in Cambridge. I have also met with teams at Harvard and Columbia who have

taught and produced some of the world’s most popular MOOCs. Since childhood, I have been involved in outreach aimed at providing educational opportunity to those who cannot afford it. I am delighted that Cooper’s MOOC effort will engage high school students, some of whom who may not have access to AP courses, and STEM education attractive to them!

TCP: From your bio in the Cooper Union website, you have contributed to the research of artificial intelligence (AI). Can you tell us more about your research?

AR: I would love to! My research is generally founded on strong mathematical formalisms such as decision theory and cross cuts fields such as AI, Economics and Cognitive Science. I explore approximations that allow these formalisms to be applied to real-world applications. Specifically, I design and build smart intelligent systems (software agents) that can learn to make autonomous decisions and work as teams that solve problems in real-time. I am specifically interested in equipping agents with the ability to reason about goals and plans while accounting for time, uncertainty and costs. For instance, along with my students I designed and implemented algorithms for a National Science Foundation (NSF) project that would allow a network of radars to automatically track weather phenomenon like tornadoes so that appropriate alerts can be made to save human lives and property. My most recent NSF project, in collaboration with Columbia University, takes on the

problem of prediction of preterm births in first time mothers, considered a major public health issue with profound implications on society. We are developing advanced machine learning algorithms including Bayesian statistical methods and Support Vector Machines to analyze electronic health records to facilitate this prediction.

TCP: What advice would you give to Cooper students?
AR: Cooper students form an exceptional community of scholars. They already know what it is to aim high, work hard and follow dreams. That said, I think it is important to build on that foundation by creating a unique vision and record of their time at Cooper. Follow your passion and do whatever it takes to achieve your goal. Challenges are inevitable in one’s career but they are also the facilitators of growth and innovation. I am a strong proponent of undergraduate research – I know for a fact that my research experience as an undergraduate in Information Retrieval set my career path and to this day I love what I do! I would strongly encourage Cooper students to participate in research and other academic activities that exemplify their individual strengths. I also think all undergraduate students should get a strong background in Mathematics and Humanities – Arts, Literature etc. If I had a chance to redo my undergraduate education, I would take all the courses I could in these areas and not just my focus area. Finally in all things, be compassionate towards other people– I believe that is the secret to a truly successful life.

TCP: What are some of your hobbies?
AR: I love reading classics including works by Thomas Mann, Garcia Marquez, Nabokov, Tolkien and C.S. Lewis. I enjoy painting with watercolors. I also enjoy spending time outdoors - hiking, spelunking, kayaking, calisthenics and shadow boxing. I sang Contralto in church choirs for over a decade and I now enjoy attending New York Philharmonic concerts and exploring Central Park with my husband. Of late, my hobbies have revolved around the activities of my 2 sons, ages three and one - watching them grow, play and learn.

TCP: Do you have any closing remarks?
AR: I think Cooper Union and New York City are exciting places to be as for students and educators and I look forward to what the future has to bring! ♦