DESIGNING FOR THE URBAN NIGHT:
An Interdisciplinary Course on Lighting, Technology and Urban Design

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ABSTRACT
Lighting design for urban public spaces increasingly requires an integration of strategies from urban design, planning, interactive technologies and lighting design. Few academic programs provide the context for teaching these subjects together. We report on the results of an innovative graduate design workshop taught at the MIT Media Laboratory where we introduced an interdisciplinary group of architects, urban planners, and engineers to the technical, cultural and social issues surrounding the design for urban spaces at night. These contextual details were tied to specific research and design exercises in the field. Ultimately, students selected sites and built full-scale interventions in public space, with results ranging from digital fireflies to analog shadow playgrounds.

Keywords: nighttime, lighting, urban design, education

1. INTRODUCTION
Though lighting courses are taught in design schools, rarely are urban designers and planners asked to consider aspects of night and light beyond basic street lighting. Nighttime is ignored by urbanists because it is too often seen simply as an absence of light. In contrast, because nighttime is a part of our physiology and psychology and therefore shapes our social, political, cultural, and economic lives, we argue that learning about how it impacts our interactions and relationship with the environment should be part of an urban designer’s education.

In response, we created a course that would address these issues and make the students more aware of nighttime, lighting, and our relationship with it. The purpose of the class was to explore the world of night in the city and to investigate ways of imagining and creating exciting urban experiences through new lighting technologies and urban design interventions. It had two main objectives: (1) explore the theme of nighttime and the city through multiple disciplinary
lenses ranging from psychology, sociology, environmental studies, and history to human-computer interaction design, urban design, planning, architecture, and lighting design; and (2) support project-based interventions that rethink how urban lighting and new technologies might transform the experience of the city at night.

2. INTRODUCING THE COURSE
The graduate-level course was based in the MIT Media Lab, but the class was open to all students at MIT and especially those within the School of Architecture and Planning. We aimed to attract students from a range of backgrounds including: urban planning, architecture, engineering, computer science, interaction design, and new media, but in the end the class was principally made up of students from architecture and urban planning.

The course was organized as a workshop with each week’s class and readings focusing on a specific topic. Over the semester the students were asked to undertake a series of four exercises that explored different aspects of night, light, and the city. They included: (1) documenting their use of technology at night for one week and distilling their observations into a presentation; (2) documenting their chosen site at night in order to better understand it, define problems and issues, and help identify possible directions for their final projects; (3) observing a twenty-four-hour workplace or worker for one night and documenting their observations and impressions; and (4) participating in a field trip to either Waterfire [4] (an art and community event where bonfires are lit on the three rivers in Providence, RI, USA) and/or attending a public viewing at one of the three local observatories. In addition, each student undertook a major final project that allowed them to investigate topics that reflected and explored their interests and background.

Fig. 1
Map of Cambridge, MA, USA illustrating the locations of the projects.
3. CROSSCUTTING THEMES AND TOPICS
The class focused on seven basic topics: physiological and psychological perception of light and darkness; social interaction after dark [2]; the history of lighting [3]; nighttime economy and labor [2]; the impact of night and light on urban form; celebration; and environmental concerns.

In addition there were also a number of broad conceptual themes that occurred repeatedly throughout the course, including the concept of the night as a frontier to be colonized, surveillance and fear [1], the politics of lighting; and the contradiction of night as a time of anxiety, alienation, and loneliness, but also one of beauty, excitement, spectacle, and freedom.

4. FINAL PROJECTS
The students were asked to choose from two sites, which were within walking distance of MIT, and to design an intervention (artifact, event, interaction, physical intervention, policy proposal, etc.) that was celebratory, educational, informational, utilitarian, and/or transformative, and that changed how the site was seen and experienced at night. In most cases, a full-scale mockup or demonstration of the project was expected.

[2] John Arroyo - GLASSscapes (on the dock and in the water of Broad Canal)
[5] Sari Rothrock - Trolley Memory (Lafayette Square)

The students created a number of imaginative projects. W. Victoria Lee’s Night Poetry was located in a plaza that was relatively active during the day but much less so at night. For her project, she created a set of outdoor urban “refrigerator poetry magnets” to encourage nighttime interaction — not only could passersby create poetry at
night, but they could be arrange the words during the day and leave poetic messages for evening visitors. Sari Rothrock chose a site that had once been an important intersection for the nineteenth-century trolley system in the Boston area. Though a recent revitalization project had traced the tracks in the pavement there was no historical information or documentation on the site. For her project *Trolley Memory*, she built a set of four signs that fit on top of existing granite bollards that glowed softly at night, each describing one aspect of the site’s transportation history. Wayne Higgings created a *Shadow Playground* by using streetlights as mini-projectors. By placing a three-dimensional sculpture between the beam of the streetlight and the ground, he was able to cast different types of shadows onto an otherwise barren plaza. In his project *Glasscapes*, John Arroyo sought to celebrate and remind residents and visitors of East Cambridge’s rich industrial heritage and the numerous glass factories that used to operate in the neighborhood. He did this by floating dozens of glowing glass jars on the Broad Canal as well as projecting a series of historical photographs on the nearby storage tanks. Finally, Jim Salem’s *Fireflies* was an organic light sculpture set in the trees, intended to delight and intrigue the pedestrians and club-goers in Central Square. Each “firefly” made of an LED light, microcontroller and coin-cell batteries inside a ping pong ball was programmed to flash at its own rhythm, creating organic patterns of soft light. In addition to ping-pong balls, some fireflies were created with 3D-printed diffusers shown in Fig. 7.

5. CONCLUSIONS
The course was very successful. Student engagement was strong and they produced high-quality innovative projects. We also had the active participation of representatives from the planning, urban design, and public art departments of the City of Cambridge, as well as a local real estate developer, all of whom were excited by the projects and the possibility of future nighttime interventions.

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REFERENCES


Fig. 5
*Glasscapes* by John Arroyo.

Fig. 6
*Fireflies* by Jim Salem.

Fig. 7
Rendering of 3D-printed diffusers for *Fireflies* by Jim Salem. Design and rendering by Peter Schmitt.