

Vital Collaborations

The interdisciplinary field of biomechanics has found a natural home at Yale

From Waste to Energy

Yale engineers discover real benefits by utilizing a synthetic solution

Expanding the SEAS Network

The new Yale Institute for Network Science connects SEAS to a variety of researchers

2013-2014

YALE ENGINEERING

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LED'ing the Way

The digital canvas is just one of many ways SEAS is engineering connections across campus

Lighting the Bridge

The new Engineering café illuminates engineering across the Yale campus

There are moments in our lives when the figurative light bulb turns on, providing us with inspiration. But think of the inspiration that might result from thousands of lights surrounding you. This magnitude of illuminated inspiration has arrived at the Yale School of Engineering & Applied Science.

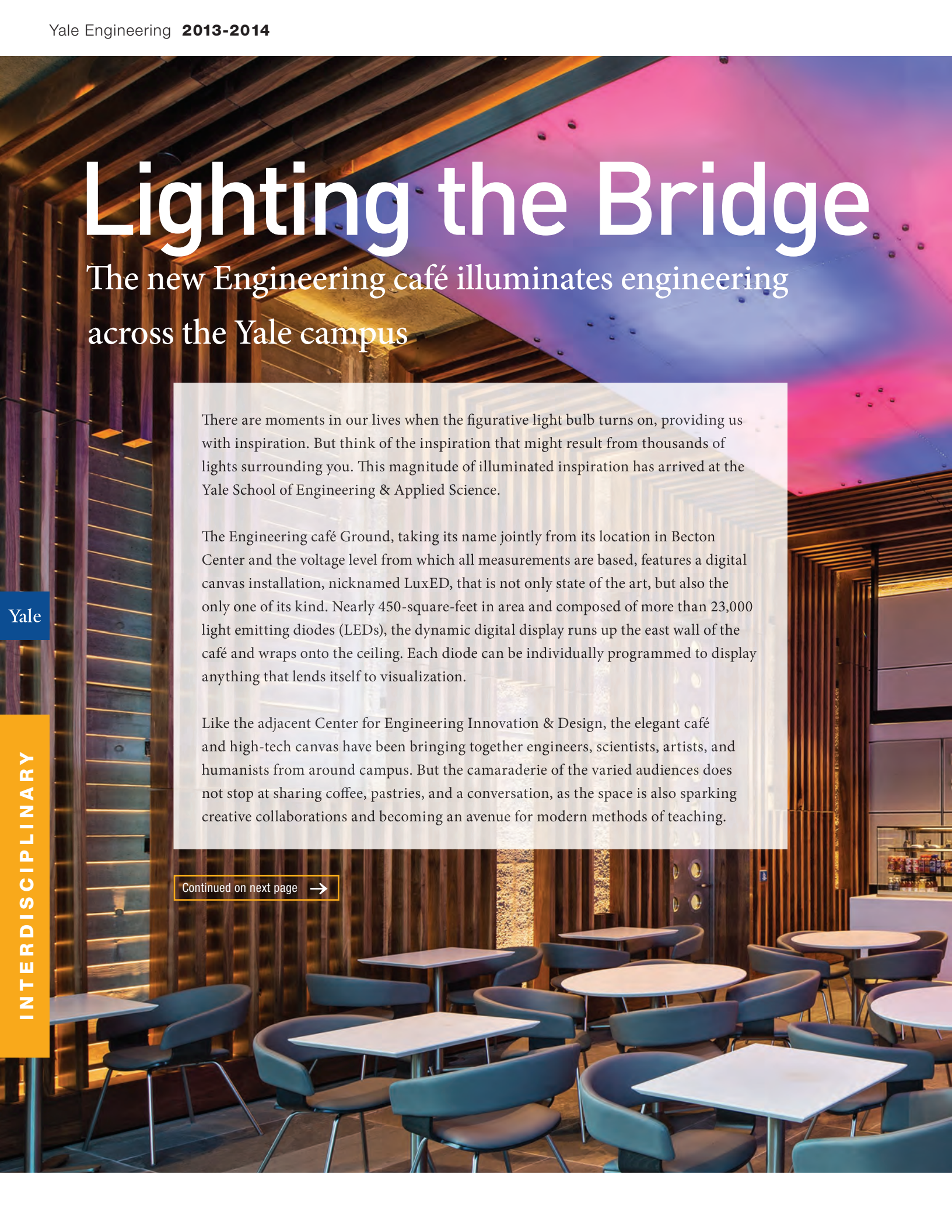
The Engineering café Ground, taking its name jointly from its location in Becton Center and the voltage level from which all measurements are based, features a digital canvas installation, nicknamed LuxED, that is not only state of the art, but also the only one of its kind. Nearly 450-square-feet in area and composed of more than 23,000 light emitting diodes (LEDs), the dynamic digital display runs up the east wall of the café and wraps onto the ceiling. Each diode can be individually programmed to display anything that lends itself to visualization.

Like the adjacent Center for Engineering Innovation & Design, the elegant café and high-tech canvas have been bringing together engineers, scientists, artists, and humanists from around campus. But the camaraderie of the varied audiences does not stop at sharing coffee, pastries, and a conversation, as the space is also sparking creative collaborations and becoming an avenue for modern methods of teaching.

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Yale

INTERDISCIPLINARY





Engineering Interactivity

While the digital canvas provides an impressive medium, displaying everything from the research images of the School of Engineering & Applied Science's faculty to the renowned Vincent Van Gogh piece *Starry Night*, a group of four students chose to further enhance the content displayed on the canvas by providing another element: interactivity.

A new freshman course, entitled "Introduction to Engineering Innovation and Design," was created to showcase the role of creative problem solving in the five undergraduate engineering disciplines. A term project challenged student teams to apply their newfound engineering skills to solve problems for clients from across campus. Two student teams elected to work in the new café on projects that allowed café patrons to interact with the LED digital canvas.

Aptly titled "Team Bubbles," one group developed a system that displayed bubbles to signify customers and reflect real-time human movement

in and out of café. By placing an infrared sensor on the café's entryway to detect motion, a bubble would form on the canvas each time a customer entered the space. The bubble would then float throughout the wall and ceiling space, joining the other bubbles that were created by earlier customers. When the customer exited the café, the bubble would pop and disappear.

"The project was a great example of the limitless possibilities of the LED technology," said Vincent Wilczynski, Deputy Dean of the School of Engineering & Applied Science. "It shows that not only can the canvas be used for stunning imagery, but also unbounded creative interactivity."

Providing a Culture of Engineering

The creation of the Engineering café Ground was one component of Yale School of Engineering & Applied Science Dean Kyle Vanderlick's continuing effort to foster a culture of engineering on the Yale campus.





“Engineering is the bridge between the sciences and the humanities,” says Vanderlick. “This installation is a symbol of that.”

From a location perspective, the café truly is a link. It sits at the figurative and literal bridge between the two entities. Located between Yale’s central campus, which primarily houses the humanities, and Science Hill and envisioned as a way to encourage students and faculty from different disciplines to mingle, the café is fulfilling the metaphor.

“We wanted to provide a space for the broader community to gather, to chat informally, to have a sense of a ‘home,’” says Vanderlick.

Bentel & Bentel, the architecture firm well known for its work on fashionable restaurants, including New York City’s Gramercy Tavern, Le Bernardin, and the Modern, the restaurant at the Museum of Modern Art, was hired to design the space. Bentel & Bentel suggested that the School incorporate the LED canvas as a key aspect in the new café. This idea was eagerly received, both for its potential to attract non-engineers and because a digital canvas would be a physical manifestation of the intersec-

tion of science and art. The canvas was designed to be visible to passersby on Prospect Street, thereby using light to draw attention to engineering.

“I believe the installation will develop as a new cultural, visual icon on campus, and Prospect Street is going to change, because of the light, the energy, the activity,” said Wilczynski, who discussed the LED project during its design with Leo Villareal, a Yale alumnus and one of the world’s foremost LED artists. Villareal’s largest installation, The Bay Lights, is currently displayed on San Francisco’s Bay Bridge. “Engineering will make its way out into the street. And engineering makes it all work.”

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The Yale-affiliated aspect of the project extends well beyond Villareal and helps make this installation uniquely Yale, with the team of contributors including Philips/Color Kinetics (CEO Jeff Cassis is a Yale Environmental Engineering MS alum), Charney Architects (brothers Rich and Rob Charney are Yale School of Architecture alums), and installation guide Ted Pearlman (parent of a Yale undergrad) who is commonly known in the business as the “NYC King of LED.” This Yale-associated team collaborated over a period of eight months to design, create, and install the digital architecture that is unlike any other in the world.

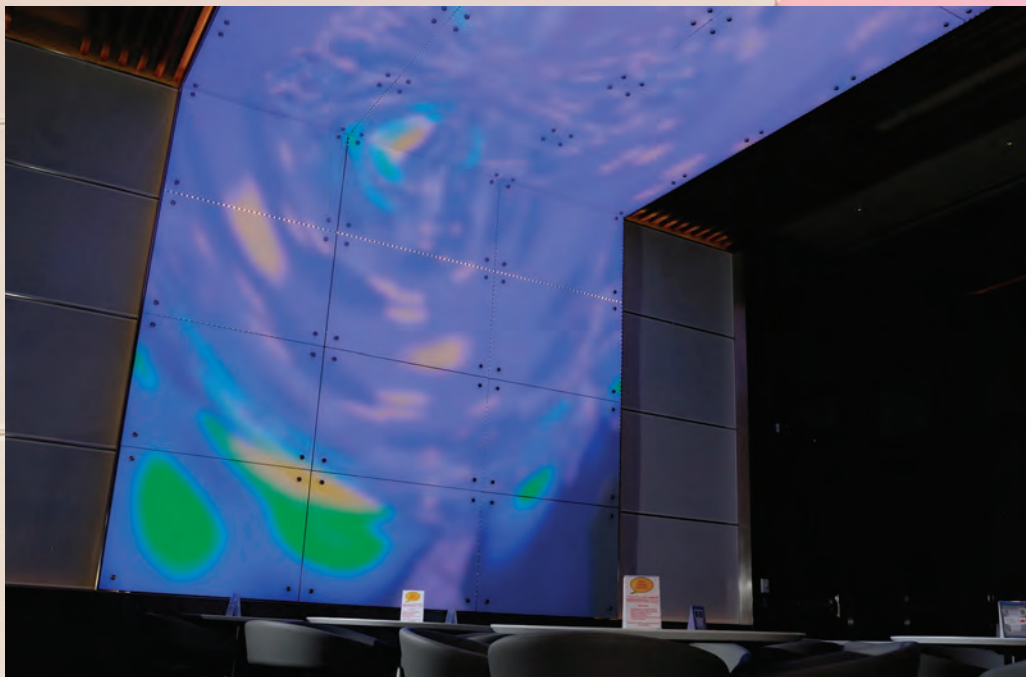
Sharing the Vision – and the Space

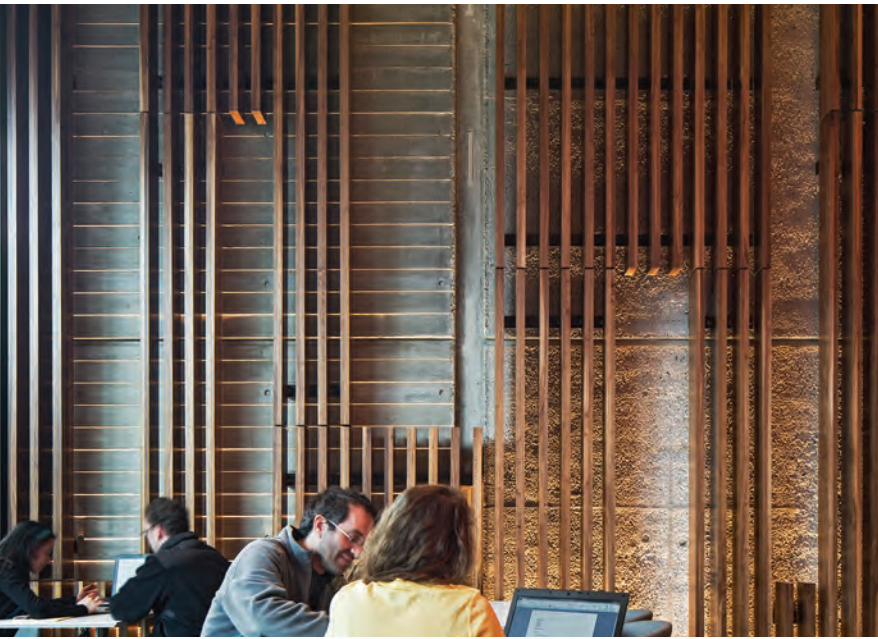
Besides Engineering, other disciplines such as Drama and Art have already begun to tap the space for their projects.

Elise Morrison, an English Department postdoctoral associate, has used the digital canvas both for her teaching and for showcasing her own work. She taught students in her theater studies class “Digital Media in Performance” how to use the display and then staged her students’ work



in the café. Morrison, whose work often incorporates elements of surveillance footage, said she plans to hold two or three of her own performance pieces in the café using the LED panel to display the video.





Johannes DeYoung, a critic in Yale's School of Art, teaches digital video and animation and is as thrilled by the possibilities of the digital canvas as anyone. His swirling, evocative, and powerful video visions are an obvious match for the space, and he has already had Yale art students create pieces that were displayed on the café's digital canvas. This past summer he had a chance to see how it all works when he led outreach workshops in digital animation for local high schools, using the café as the classroom.

"It was the first time the students actually programmed some interactive works for the walls, and I was really excited about this," DeYoung said. He is currently thinking about pursuing more in-depth digital video projects.

"It's a social, communal space and a completely immersive environment in that the wall wraps around you, so its potential uses are pretty widely varied. I see this as a way to engage with something that's encompassing – a wall of light that really inundates your senses." 🎓



The Engineering café Ground is located at 15 Prospect Street. For more information on the digital canvas and to see recent projects – including photos and videos – visit <http://seas.yale.edu/cafe>

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